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# Railway Age

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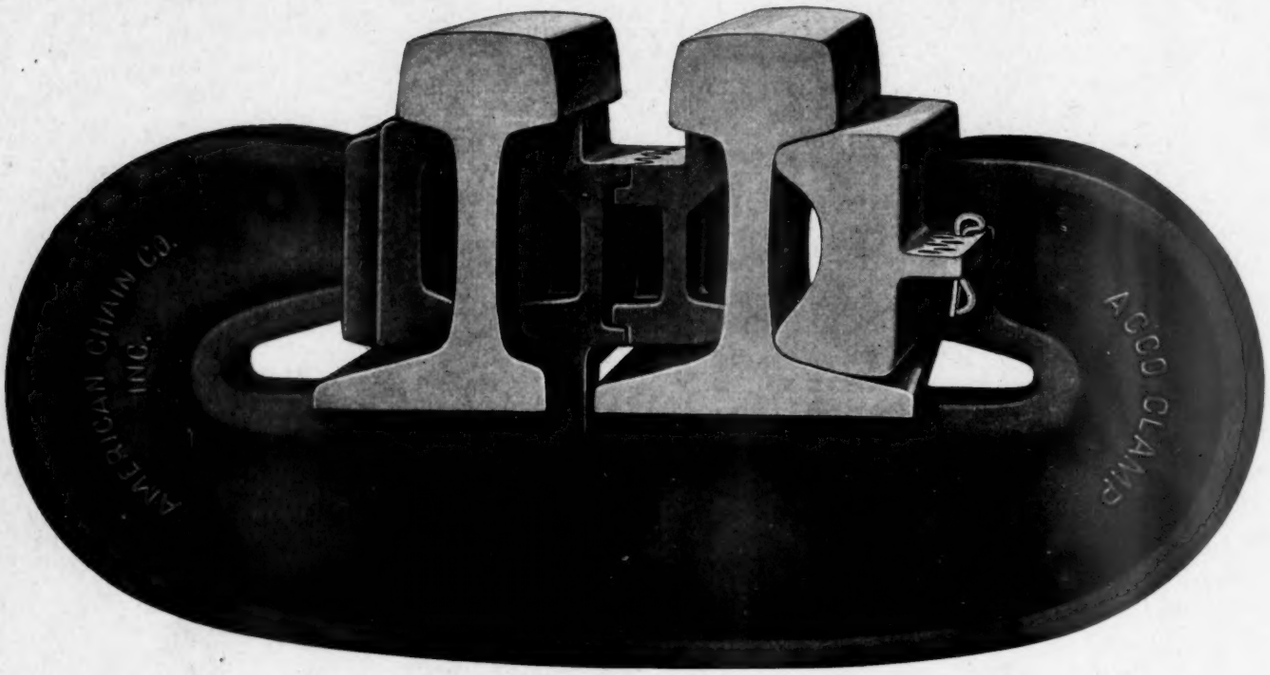


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# EDITORIAL

Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

**Getting Results from Shop Forces**

Despite the fact that the railroads are rapidly filling the places of the strikers, it is probable that the heavy traffic of the next few months will have to be handled with a force of mechanics that is below normal both in number and in skill. This is certain to complicate the problem of providing sufficient motive power and will make it necessary to get the most ton-miles per mechanic both in the back shop and in the roundhouse. How can this be done? In the first place classified repairs should be made in a thorough and workmanlike manner and emphasis should be placed on the quality of the work rather than on the number of locomotives turned out of the shop. If a locomotive is properly overhauled, it can make a large mileage after repairs with little attention. If the work is slighted, it will require an excessive amount of minor repairs in the roundhouse and is likely to cause delays or failures on the road. It will be a good policy to try to move the traffic with the minimum number of locomotives by using the power intensively. This will avoid congestion in the roundhouses, which multiplies lost motion. Practically every road has certain classes of power that are troublesome to maintain. Wherever possible, such locomotives should be put in storage. The best results will be secured not by keeping the "weak sisters" in service and allowing them to slow up train movements, but by getting increased mileage out of the locomotives that are most powerful, most efficient and most easily maintained.

**Watch Morale of Train Men**

The interest and co-operation of train and engine service employees is particularly essential to the efficient operation of the railways during a period of traffic congestion, such as the one which we are now entering. There are a number of conditions existing on the railways at this time, however, which make the securing of this interest and co-operation extremely difficult. Perhaps the most important of these conditions is the tendency among all organized employees to be more or less sympathetic with the striking shopmen. Moreover, the delays resulting from heavy traffic and defective equipment tend to slow up the movement of freight trains and, where this goes very far, the basis of pay of train and engine men is changed from that of mileage to an hourly basis. This change removes the strongest incentive which is offered to train crews for expediting train movement. Even if delays due to equipment conditions and heavy traffic do not slow up service to the extent of putting train crews on hourly pay, the very fact that the delays occur in spite of the sincere efforts on the part of the men to move their trains tends to dishearten them and make them lose interest in "hitting the ball." The means of bolstering up the morale of the train men are well known to trainmasters, superintendents and other operating officers and it is not necessary that we should go into detail about them here. One of the most obvious means, of course, is mingling with the men, explaining to them the importance of their work in handling the heavy traffic and giving them a sympathetic hearing when they tell of conditions which make their work difficult. Another means is the removal, insofar as is possible, of conditions which tend to cause friction. On one road recently, an over-officious special guard shot a fireman on his way to work who objected to the guard's questioning as to the nature of the business which brought him on railroad property. All train men immediately walked out and returned only after all special guards had been removed from the property and soldiers substituted in their places. The company could not be blamed, of course, for attempting to safeguard its property, but where guards are necessary for this, they should be made to understand thoroughly that they are not to molest employees not on strike any more than is absolutely essential in the performance of their duties. With the existence of so many conditions which make it difficult to maintain the co-operation of train men it is important that their supervisory officers should be among them as much as possible. Trainmasters, for instance, are needed more sorely in the performance of their regular duties than they are at making light repairs and coupling up air hoses.

**Turn-Around Service**

Locomotive utilization is a matter which merits attention at any time, but it is of special importance under present conditions of peak traffic. Greater locomotive utilization in its simplest terms means more miles per locomotive-day and more tons per locomotive-mile. These are aims which are to be secured by many methods of efficient railroad operation. There are, however, two ideas which at present stand out above some of the others. One is that of running locomotives over more than one division, which plan of operation has already received considerable attention in these columns. The other is what is generally termed turn-around service, in which there is embodied the idea of having a freight train crew "double" the division and return to its starting point inside the 16-hour limit. The district, let us say, extends from *A* to *B*. The crew starting from *A* must move over the road and arrive at *B* in time so that it can take another train back to *A* inside of 16 hours. The district in question may be 75 miles long. The payment in that case would be on the basis of two one-way trips; namely, two days at the 100-mile minimum. Usually the crew lays over at its home terminal on alternate days. The advantage of this method of operation is primarily the incentive given the crew to move its train over the road and the adoption of turn-around service usually results in marked savings on this score. The crews further are returned to their home terminal, which is always an advantage. Locomotive utilization is considerably increased. As the idea is usually worked, the crew returns with the same locomotive, which means increased locomotive mileage. The fact that the locomotive is returned to a home terminal is no unimportant factor from the standpoint of locomotive maintenance. Of course, all roads do not have conditions which will permit a turn-around service, but there are nevertheless many districts, particularly those less than 100 miles, where it will prove advantageous. The testimony of those roads which have adopted the turn-around service is that it is difficult to understand why it is not followed more generally.

**Use of Antiquated Machinery Justified—Sometimes**

The *Railway Age* has emphasized the need of better shop machinery and equipment. Presumably in criticism of the policy, a master mechanic writes: "I think sometimes too much stress is laid on the necessity for purchasing new machinery, when the fact of the matter is that a great deal of the repairs to locomotives could be made as successfully with the machinery already on the ground. For example, a lathe or planer may be 30 or 40 years old and yet, if it is in good shape, do good work. . . . . In fact, all the ordinary light repair work in the usual run of railway machine shops can be done just as successfully with old machines as by purchasing new ones." We believe these statements are wrong as applied to nine cases out of ten and yet many shop officers agree, by inference at least, with the master mechanic that the old tools are good enough. This mistaken attitude, transmitted to the managements, is doubtless the real reason for small annual machine tool budgets and the fact that railroad shops as a rule are equipped with such a large proportion of obsolete, inefficient and costly-to-operate machine tools. There is just one case for which the master mechanic's first statement holds true. If the old lathe, for example, produces reasonably accurate work and is installed in a small roundhouse requiring only two or three turning operations a day, there would certainly be no excuse for installing a modern lathe. How many lathes 30 years old, however, are capable of even reasonably accurate work? How many shops or roundhouses are so small as not to have turning operations enough to keep one lathe busy eight hours a day? The master mechanic's error is in seeing the old lathe turn out passable work regularly and forgetting the excessive labor cost. Owing to the greater power and convenience of operation, a modern lathe can produce two or three times as much work in the same time and show a handsome saving over the increased carrying charges and power cost. In a specific case a modern boring mill worth $7,500 replaced an old machine worth $3,800, increasing the production three to one. The annual saving in labor offset all other charges and showed a profit, not of 15 per cent, but of *70 per cent* on the investment. (Railway Mechanical Engineer, September, 1921, Page 552.) Admitting the scarcity of funds for needed betterments, no railroad management is going to pass up such an opportunity if it has to borrow the money. The trouble is that many mechanical department officers themselves fail to appreciate the savings possible by improved shop machinery, and many of those who do see the possibilities fail to present them to the managements in a comprehensive, puncture-proof and convincing way.

## The "Main Tracker"

IN THE DEVELOPMENT of its plan for the systematic movement of traffic through its terminals, the Baltimore & Ohio has created a term which should come into more general use.

We refer to the term "main tracker." As stated in an article which appeared in the issue of August 19, describing the system which has been perfected for the operation of terminals on this road, the term "main tracker" is applied to those trains which are made up and dispatched from a terminal for continuous movement to destination, or to a breaking-up yard, and which in their movement pass through intermediate yards and terminals intact. In the development of this plan many trains have been operated as "main trackers" for distances up to more than 600 miles without pulling a pin.

The classification of cars into trains for movement through adjacent terminals is not new; some roads have employed it for the handling of certain classes of fast freight traffic for years. It is, however, capable of much wider application. Its supervision cannot be left to local division officers for their conflicting interests may jeopardize the entire plan. Rather it must be administered from the standpoint of the system as a whole with a well laid plan for system supervision.

A yard is a necessary railway facility. It is, however, *auxiliary to* the line and is required only to prepare cars *for movement* economically. Cars earn money only when moving. This means line movement, while time spent in yards is lost revenue. The net earnings are therefore promoted by reducing yard operations to the minimum consistent with the necessity for the economical handling of the traffic.

What are the advantages of the "main tracker"? In the first place, it reduces the amount of switching to be done in intermediate terminals with little or no increase at the originating point. This permits a direct saving to be made in terminal operating costs. Less switching also reduces the amount of damage to equipment which again creates a saving. It requires less investment in yards and postpones additions to these facilities. It also expedites the movement of traffic, speeds up the delivery at destination and thereby increases the use of equipment.

At the present time, when the roads are facing the necessity for the adoption of every measure to reduce congestion (which is confined almost entirely to terminals) and to increase car mileage, the "main tracker" deserves special consideration.

## Rates for the American Legion

ONE OF THE most difficult problems the passenger officials of the railways have had for some time has been that of making satisfactory rates for patriotic meetings such as those of the Grand Army of the Republic, the Spanish War Veterans and the American Legion. In past years when the prevailing passenger rate was two cents a mile it became the custom to make for gatherings of this kind a rate of one cent a mile. The prevailing passenger rate since 1920 has been 3.6 cents a mile. In 1921, owing to independent action taken by some railways, the old rate of one cent a mile was made for the meeting of the American Legion at Kansas City and for some other gatherings. The same rate was asked this year by the American Legion and the railways were strongly urged to grant it to this organization and also some others. It was argued that when large numbers of passengers were carried to and from a certain point at the same time a rate of one cent a mile would not necessarily be unremunerative, and that even if this would be the case the railways should be willing to stand some loss for the benefit of the men who made great sacrifices for the country during the late war.

The spokesmen of the railways pointed out, however, that the one-way rate of 1.8 cents for the round trip was relatively the exact equivalent of the one-cent rate which they formerly made. They also showed that it would not be possible for them to handle even such a large crowd as will attend the American Legion meeting at New Orleans next month at a rate of less than 1.8 cents a mile without incurring a substantial loss on the business, and that in making a rate of one fare for the round trip the railways are doing more for the ex-service men than any other class of business concerns in the country, since no other class of concerns makes them a half price for what they buy. It was also pointed out that if the railways should make a one-cent rate for the American Legion thousands of other organizations would contend that the railways would not have made this rate voluntarily if they had not thought it profitable and

would, therefore, have demanded that they also make it for these other organizations.

The result is it has been settled that the rate which will be given to the American Legion is one fare for the round trip; that is, 1.8 cents a mile. This rate is the lowest now made by the railways and is given only to a very few patriotic organizations, especially the Grand Army of the Republic and the American Legion. The rate now being made for large meetings of other kinds is one and one-half fare for the round trip, which figures out 2.7 cents a mile or 50 per cent higher than that made for the American Legion.

## Developing Machinery and Neglecting Men

THE RADICALS who desire by direct action to overthrow existing political and industrial institutions and replace them with guild socialism or Sovietism have regarded developments in connection with the coal strike and the railway shop employees' strike with great complacency. They believe and preach that the existing civilization of western Europe and the United States contains the seeds of its own destruction. They believe "capitalistic" governments are so weak, and the working class inherently so strong, that the working class by united action through strikes, and the use of violence when necessary to win strikes, can overthrow existing governments, wrest all kinds of property from its owners and establish the dictatorship of the proletariat in both political and industrial affairs.

Developments in connection with these strikes will be construed by the radicals, and not unreasonably, as supporting these views. Never in the history of the United States did any strikes illustrate so forcibly at one and the same time the power of labor unionism and the weakness of government. The United Mine Workers of America has got such a grip on the coal mining industry that it was able to stop for almost five months virtually all production of anthracite and all production of bituminous coal outside of a few comparatively small areas. The railways are winning the shop employees' strike, but in this strike, as in that in the coal mines, the weakness of government has been strikingly exemplified. In respect to both strikes government officials have been vacillating and timid. They would not take strong measures to prevent or stop the strikes when such measures might have done good. They would not later keep their hands off and let the immediate parties fight the strikes out to a definite conclusion. They would not even so enforce the laws as to cause performance of the first duty of every civilized state—the prevention of personal violence and destruction of property. Men who have committed no crime except that of showing willingness to do the productive work without which the entire population would starve and freeze have had their homes and families threatened, have been assaulted, shot and massacred. Those who have done these things have gone unpunished.

Labor leaders of a certain kind and communists and bolshevists, may well regard these developments with satisfaction. Serious-minded men who do not desire to see our political and industrial civilization overthrown and America converted into a desert and a shambles like Russia, will not only regard them with misgivings, but will seek for and try to bring about alleviation or removal of their causes.

Ours is a civilization of machinery; and the greatest dangers that threaten it are largely due to the fact that most of its financial and industrial leaders think and act so much more intelligently about machinery than they do about men. The development of machinery has produced within the last one hundred years an industrial revolution so great that it has caused changes in the relations between men working together in industry exceeding all the changes of like kind of which there is any record since the record of man's economic activities began to be kept. Modern machinery, among all the effects it has had, has had two of vital importance. First, it has enormously increased man's capacity for producing comforts and luxuries, but increased still more his appetite for comforts and luxuries. Many workingmen now have comforts and luxuries which no king had up to a century ago. But the gap between what people have and what they want has been widened instead of narrowed. The spectacle of comfort and luxury did not make many people dissatisfied before the age of machinery because few people then had comforts, and exceedingly few had luxuries. Now so many have comforts and even luxuries that those who do not have them are greatly dissatisfied.

Second, the development of modern machinery has resulted in the creation of enormous industrial concerns employing not only thousands but hundreds of thousands of men, and the machinery has come between the owners and managers of these concerns on the one side and their employees on the other. This is strikingly true of most railroads. Most railway managers have come to think of operation and its results mainly or almost entirely in terms of machinery. How could it be otherwise? Operations are so vast that managers have to get information regarding operating results in statistical form, and practically all railway statistics, except those prepared for very special purposes, relate to *car* miles, tons per *car, train* miles, tons per *train, locomotive* miles and other results of the performance of machines. The men who run these and other machines, and upon the efficiency of whose work the efficiency of the machine largely depends, are not kept in mind by the employer as he kept his men in mind when there were but few of them and he knew them personally and even worked beside them at the bench. It is literally true that the higher officers of most large concerns think hardly at all in terms of men except when the human element becomes refractory and hinders the smooth and efficient running of the machines.

If machinery has obscured the owners' and the managers' view of the employees, it has almost entirely cut off the employees' view of the owners and managers. What does the average railway employee know about the economics of the railroad business; about the efforts and sacrifices the stockholders and bondholders have made to get the money they have invested in railway securities; or about what the chairman, president and vice-presidents do to earn their so-called "fancy" salaries? He knows that he and other employees actually run all the machines. He is taught in his radical literature that he and other employees do all the really productive work; that the security owners and higher officers are merely parasites and vampires who live in affluence off the fruits of his labors; and he very seldom sees any evidence to the contrary. Is it any wonder, then, that, desiring like other people to get more comforts and luxuries, the average railway employee supports every movement which the leaders of his labor union tell him will enable him to increase his income at the cost of the security owners and higher officers?

The best brains of the railroads and other large industrial enterprises have been absorbed for years in improving the mechanical technique of plant construction, maintenance and operation. Has a railway officer shown that he knows just where a grade should be reduced, or heavier locomotives used, to secure maximum increases in train load with the minimum increase of capital investment? Has he shown he is master of the technique of so rearranging terminals and marshalling and directing the movement of locomotives and cars as to secure the maximum practicable increases in

locomotive miles and car miles per day? If so, he has stood a very good chance of advancement to the highest offices in railroad service, even though he has shown none of those qualities which enable a man to win the confidence, loyalty and co-operation of large numbers of other men.

Now, it would be very foolish to minimize the importance of the managers of large concerns being masters of the technique of their business, but it has long been becoming plain, and it never was so plain as it is today, that the exaggerated stress which has been and still is being placed upon the improvement of machinery and the operation of machinery is hindering increases in the efficiency of industry and actually threatening the destruction of our machine industrial civilization. The many great strikes which have occurred in recent years in countries with highly developed industrial systems, and the many more which have been barely averted both before and since the war, are signs too ominous to be disregarded.

Many business men irritably attribute them to the growth of labor unionism and to bad leadership of the unions. That is only part of the explanation. It does not explain why the employees of so many large concerns are following the leadership of the heads of labor unions instead of the leadership of the heads of these business concerns. The rest of the explanation is that many managers of large concerns who are masters of the machine technique of their businesses either have not tried to win the loyalty and co-operation of employees or have conspicuously failed in their efforts to do so.

If all managers of large concerns had failed equally in their efforts to win and hold the leadership of their employees the situation would appear hopeless. Fortunately that is not the case, and if there were not so many men who are unwilling to be taught by anybody's experience but their own we might hope that the methods of those who have been conspicuously successful in dealing with labor would be widely copied with most wholesome results.

The experience of those who have been most successful in dealing with labor in large concerns clearly indicates certain things. First, some of the very best brains in the business must be devoted almost solely to devising and carrying out plans for improving the relations between management and men, and the brains devoted to this task must be those of men who are sincerely anxious to promote the welfare of employees in every practicable way. Secondly, no effort should be spared to give to the employees the best working conditions and wages that the concern can reasonably afford to. Third, no effort should be spared to disseminate among the employees all the facts regarding the business required to nullify propaganda against it and its management carried on by labor union leaders or radicals. Fourth, the work of employees should be so firmly and thoroughly supervised that they will be required to do efficient work and at the same time it should be made clear to them why efficient work is in their own interest. Fifth, not the slightest timidity, but the greatest firmness and courage, should be shown in promptly resisting and even fighting to a finish every effort of the employees or their unions to get working conditions that unreasonably interfere with efficiency or wages that are excessive. Sixth, every reasonable inducement and opportunity should be offered to employees to become partners in the enterprise by buying its securities.

There are lamentably few large concerns in which all, or even most, of these things are done. There are lamentably few in which the man is patiently studied in the higher offices as much as the machine.

While many specific suggestions based upon experience can be made as to what should be done, one thing that is of vital importance is that financial and industrial leaders should awaken to the fact that our civilization of machinery, with all its potential power of securing increased production and greater material comfort and happiness for all classes of people, is threatening to destroy itself by exalting to excess the kind of ability that has matchless skill in the engineering of materials and machinery and largely ignoring the supreme need for developing and advancing to the highest positions the kind of ability that understands the *engineering of men.* There are many men in important positions in industry whose idea of dealing with labor is to placate it and many others whose idea is to fight it. There are some who see that merely placating or merely fighting labor will simply make bad conditions worse—that there are times when it should be placated and other times when it should be fought, but that most of the thought and energy devoted to dealing with it should be used in trying to bring about a better mutual understanding and closer co-operation.

All classes of people may well pray for speeding of the day when large enterprises will be dominated by more men who not only know the technique of their businesses, but who can compete successfully with the heads of labor unions for the leadership of their own men.

## Two Kinds of Union Leadership

THOSE interested, which includes almost everybody, can as a result of recent developments draw conclusions as to what kind of leadership is best for railway employees. Several classes of railway employees had their wages reduced on July 1 under awards made by the Labor Board. Some of them were ordered by their leaders to strike. Some of them were kept at work by their leaders.

The men who were ordered to strike were, of course, those employed in the shops. Those who struck in obedience to the order of their leaders and are still out have lost ten weeks' wages. Those who struck and later returned to work lost their wages while they were out and also their seniority rights. The strike has been won by most of the railways. The facts show this, and the heads of the shop crafts unions tacitly admit it. Weeks ago they agreed to put the men back to work at the wages awarded by the Labor Board, subject to rehearings, provided the railways would take them back with their seniority rights unimpaired. The railways refused to do this.

The number of men employed in the shops has constantly increased. Recently the leaders of the national unions have evinced a willingness to make settlements with only part of the railways on the basis of all strikers on these railways being taken back and questions with respect to seniority rights being settled later by negotiations. Everybody knows what this means. It is an admission that the strike is irretrievably lost on most railways, and a virtual admission that in time it will be lost on all the others unless some settlement with these others is soon made. Thousands of the strikers have lost their former positions forever. They have lost many millions of dollars in wages while they have been out. The shop crafts unions on many railways have ceased to exist and no longer represent the shop employees on these roads.

These are the results of one kind of leadership—the kind that led the men out on strike against the decisions of a government body created by the public for the purpose of peacefully settling railway labor controversies.

Among the unions besides those of the shop crafts whose members had their wages reduced were the United Brotherhood of Maintenance of Way Employees, the Brotherhood of Railway and Steamship Clerks, and the Brotherhood of Railway Signalmen. Their leaders were as strongly opposed to the reductions of wages as the leaders of the shop crafts unions. They could have caused strikes also. The heads of

these unions, Messrs. Fitzgerald, Grable and Helt, resisted all demands that they issue strike orders. They kept most of their men at work and the men have received their wages while the shop employees have been on strike. Their unions are still intact and their men retain all the rights and privileges they possessed before. The United Brotherhood of Maintenance of Way Employees already has been given a rehearing in its wage case, and the other unions mentioned soon will be. The unions whose members have stayed at work have not incurred public disapproval by striking against a decision of the Railroad Labor Board, or got themselves into trouble with the law by committing acts of violence.

There has been much criticism of the kind of leadership that some of the railway labor unions have had within recent years. It has been claimed that their members would fare better under leaders who were willing to submit their claims to arbitration and abide by the results than under leadership which opposed all arbitration and refused to accept arbitration decisions seemingly adverse to the employees, even when these were rendered by a body created by the public to render such decisions. Some of the railway employees whose wages were reduced on July 1 have had leaders who preferred to strike as a means of getting what they wanted, and some of them have had leaders who preferred peaceful methods of getting what they wanted. Can there be any doubt as to which kind of leadership has been best for the employees during recent troubled months?

It is to be hoped that railway employees of all classes will reflect carefully upon the developments which have occurred on the railways since July 1. If they do, there can be little doubt as to what kind of leadership they will decide will be best for them in future.

## The Problem of Railway Power

THE RAILWAYS are in the midst of a transportation crisis similar in some respects to that of 1920, but different from it in other important respects. That of 1920 marked the end of a period of great business activity. The present one, unless all appearances are deceptive, marks the beginning of a period of great business activity. All the indications are that the available freight traffic will exceed the capacity of the railways for months and even years to come. With both the bituminous and anthracite mines opened and with the great shortage of coal it would seem that throughout the fall, winter and spring, and perhaps even later, they will be called upon to move more coal than they are capable of moving. The crops promise to be enormous. Traffic of other kinds already is moving in unprecedented volume, and indications are that it will continue to do so.

How well the problem presented will be solved will depend largely on the efficiency with which the railways are able to use their cars, and this in turn will depend largely upon the co-operation they can get from shippers and consignees. We discussed the problem of car service in an editorial in our issue of September 2 entitled "Some Things That Must Be Done."

In every crisis of this kind, however, there is presented a problem more important than that of car efficiency. This is the problem of locomotive efficiency. Experience over a long period beginning with the great congestion and car shortage which culminated in 1906 and 1907 has shown that the ability of each individual railway and of the railways as a whole to cope with the traffic depends more upon the amount, quality and condition of the locomotive power available than upon anything else. The great so-called "car shortages" in the past usually would have been better named if they had been called "locomotive shortages." In many cases there were enough and more than enough cars available, but empty and loaded cars accumulated and caused congestion because there were not enough locomotives to keep them moving, or because the locomotives available were not used with the greatest possible efficiency.

The statistics of the American Railway Association show clearly that a car shortage is coming rapidly. The number of surplus cars in condition for service decreased from 239,160 on July 8 to 120,961 on August 23. Attention already has been called to this decline in the number of serviceable cars. It is ominous enough. But the decline in the number of surplus serviceable locomotives which is occurring is equally significant and little attention has been called to it. On July 1 the railways had stored 6,332 serviceable locomotives. On August 15 they had stored only 4,077 serviceable locomotives.

The effect of this decline in the locomotive surplus on the policy of some railways is shown by the recent increase in orders for new locomotives. In the early part of this year the railways placed relatively large orders for freight cars and only relatively small orders for locomotives. In the months of July and August, however, they ordered 573 locomotives as compared with only 432 in the entire first six months of the year. The increased attention which this indicates is being given to the problem of power is both significant and encouraging. Not enough attention is being given to it yet, however.

If the railways are to handle the very maximum traffic of which they are capable, not merely during the next few months but during the next year and the immediately succeeding years, it appears evident that they must do at least certain things with respect to their power.

First, they must spare no study or effort to secure the maximum utilization of the power available. This means not only putting forth every effort to put and keep it in repair, but also putting forth every effort to keep locomotives out of roundhouses and shops and out on the road where they can actually pull freight. Several railways already have made successful experiments with running locomotives over more than one division and operating through freight trains for long distances without breaking them up. The running of locomotives over more than one division has passed the experimental stage and the results which have been obtained show that it can be tried with highly beneficial results on many lines where it has not already been tried.

Secondly, the railroads should improve as many of their old locomotives by installing capacity increasing equipment as the conditions in their shops will permit. There are, of course, many railways whose shops are still crippled by the strike, but many others have sufficient forces to proceed not only with current locomotive repairs, but with the work of improving old locomotives.

Third, the orders for new locomotives should be increased. Many railways will find it much easier under present conditions to buy new locomotives than to repair or improve old ones. The builders are still able to turn out locomotives within a few months after they are ordered, and there is little or no room for doubt that not only for many months, but for years the railways will have plenty of use for any reasonable number of locomotives that may be ordered in the present year. The sooner they are ordered the sooner they will be available to relieve congestions and move the business. It should hardly be necessary to emphasize the importance of ordering locomotives that are fully equipped with the various modern devices that save fuel and increase capacity, in view of the present and prospective cost of fuel and the need for effecting the greatest possible economies in operation.

The transportation problem confronting the railways is and will continue to be largely a problem of power, and it cannot be recognized and dealt with as such too soon.

# Canadian National Installs Grain Car Unloaders*

## Essential Features of Equipment, Each Unit of Which Empties Six Cars Per Hour at Port Arthur

By F. Newell
Mechanical Engineer, Dominion Bridge Company, Ltd., Montreal, Que.

A SUCCESSFUL box car unloader for grain must meet the following requirements:

(1) It must not damage the railway rolling stock, no matter how defective the condition of such rolling stock on arrival at the elevator.

(2) It must be designed to handle all types of box cars that may be received at the elevator.

(3) It must remove all grain from the car to the elevator pit without loss of grain and without hand labor.

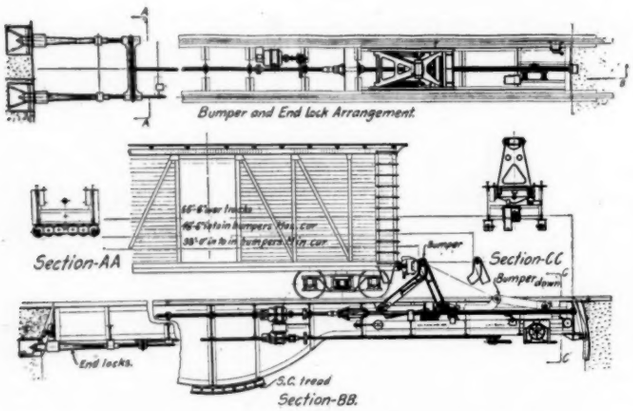
(4) It should have means of removing the grain door quickly and without damaging it.

(5) It must be made practically foolproof in operation, and safe and reliable under all conditions of operation.

(6) It must be sufficiently rapid and economical in operation to more than justify its first cost.

(7) It must be served by trackage that will permit rapid handling of cars to and from the unloader without interruption to the unloading process over long periods.

In order to get the grain out of the typical box car, the grain door has to be forced open, and if gravity is to be used, the car must be tilted either endways or sideways, or both. Therefore, as tilting operations must be performed to empty the car, the most ready way is to run the car on some form of rocking table or cradle provided with end bumpers to keep the car from rolling off, and also with some form of mechanical door opener which will open and carry the door clear of the flow of grain. If we consider the shape of a box car with its long length in comparison with its width, and with the door in the middle of its length, it will be seen that either

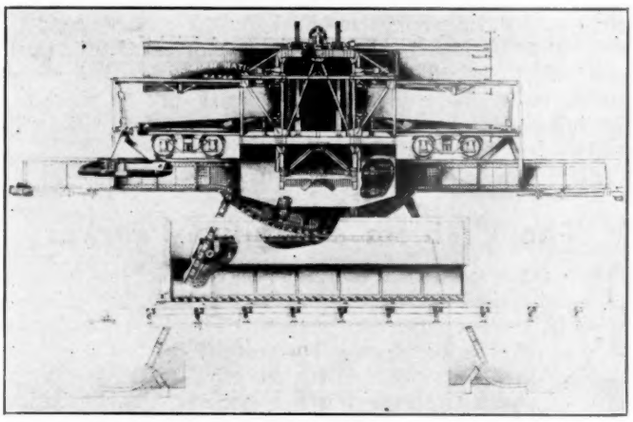



**Details of the Car Tilting Device in Cradle**

or both side and end tilt would have to be made many times to empty the car of all grain; consequently the cradle should be supplied with deflecting baffles which can be inserted in the car and avoid the side tilting operation, and an unnecessary number of end tilts.

Before designing the unloaders at Port Arthur the trunnion live roller, knife edge suspension, rope suspension and rolling types were considered. The relative advantages and disadvantages of side tilting, superelevation of the outer rail and the use of deflecting baffles without side tilt to the car were also considered.

The trunnion and knife edge suspension types are comparatively cheap in construction as far as first costs are concerned, but are liable to break down from wear and are difficult to repair in case of such failure. The lubrication of heavily loaded trunnions presents some difficulty, and the maintenance of lubrication during periods of rest also entails a large degree of uncertainty. Further, if the point of suspension is kept below the base of rail, in order to keep the supporting bracket clear of the flow of grain, the out-of-balance moment when tipping to an angle of 45 deg. causes a heavy peak torque on the operating mechanism, and a correspondingly large motor is required. On the other hand, if the point of suspension is placed above the base



**A Sectional Elevation of the Car Unloader**

of rail in order to reduce the out-of-balance moment, the supporting bracket will interfere with the flow of grain, unless special rotating hoppers are introduced, which in turn provide additional complication.

A high virtual axis of rotation can be obtained by using a live roller support and a curved track; this, however, introduces a complicated track support, together with all the disadvantages attendant on live rollers, and a complex number of parts. Also, the axis of rotation will remain fixed and a good distribution of grain in the receiving hopper will not be obtained.

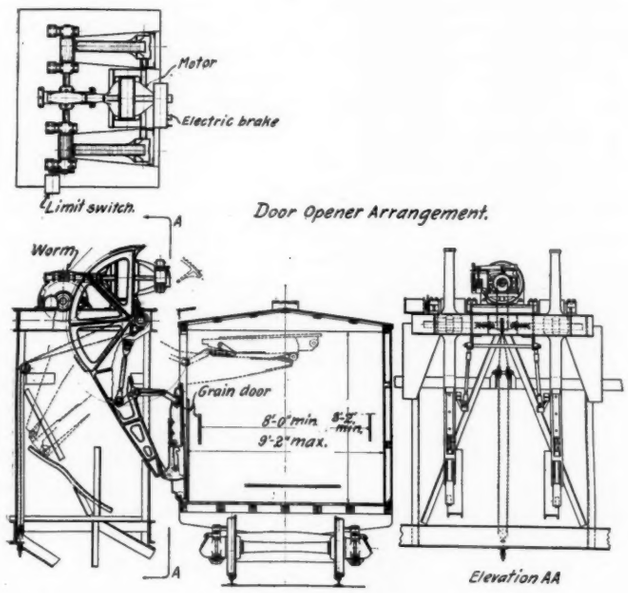
By side tilting the cradles or with a superelevation of the outer rail, it might be possible to do away with the deflecting baffles. This, however, causes serious side stresses in the cars, for which they are not designed, and it is doubtful if sufficient side tilt could be given to the car to obviate the necessity of hand sweeping to clean the car thoroughly after operations were completed on the unloader. By inserting deflecting baffles, an angle of slope of 30 deg. is made by the trough formed between the baffle and the floor of the car, when the car is tipped to 45 deg. and the baffle inserted at 45 deg. to the longitudinal axis of the car, whereas in the case of a 15 deg. side tilt the maximum angle of slope is only increased about 5 deg. and along a plane of about 33 deg. to the longitudinal axis of the car.

*Abstracted from a paper presented at the general professional meeting of the Engineering Institute of Canada at Winnipeg, Man., on September 7.

Under these conditions the grain is more likely to run down to the other end of the car than to flow out of the side door, as is required, with a minimum number of end tipping operations. The clearance required for side tilts also makes a wider spacing of trackage and housing necessary, and a consequent increased cost in construction.

### Type Adopted for Port Arthur

The unloader adopted is of the rolling type, operated without side tilt but with deflecting baffles and an automatic door opener, which opens the grain door without damage and carries it clear of the outward flow of grain from the car. The rolling type was used because it is possible to obtain a higher virtual axis of rotation than with the trunnion type, and has not the possibility of breakdown and




**The Door Opener**

consequent delay which might occur with the use of live rollers or knife edge suspension. The higher virtual axis of rotation allows the unloader, whether empty or loaded with a full car of grain, to be in stable equilibrium. The point of support, moving in a horizontal plane in the direction of rotation, causes a less out-of-balance moment with a loaded car and a better distribution of grain in the receiving hopper than would obtain with the trunnion type.

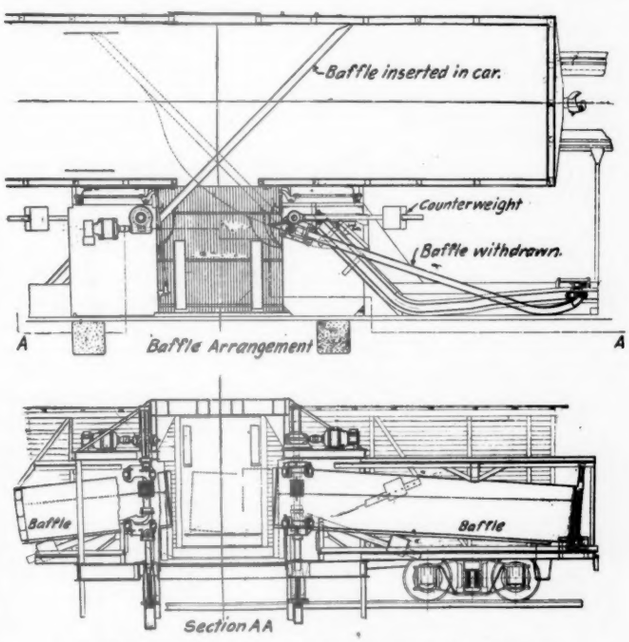
The prime function of an unloader is its ability to handle efficiently all sizes of box cars now in use, or contemplated in the near future, for the transportation of grain. In the design of the unloaders at Port Arthur, due consideration was given to (a) weight of all box cars and contents; (b) variation of length, width, and height of all box cars; (c) variation in elevation of floor of box cars, both when loaded and unloaded; (d) variation in width and height of grain doors. The result of a thorough consideration of all these points is that the unloaders have been built to cover all possible variations in the above mentioned features of box cars, with the possible exception of a few freak cars.

The unloaders consist of a heavy structural rocking cradle, capable of being tipped with its longitudinal axis at a maximum elevation of 45 deg. to the horizontal in either direction. This cradle carries the car of grain, and is provided with end locks to support the ends of the cradle definitely while cars are being taken on and off, and with collapsible end bumpers to bring the car to a central position on the cradle, clamp the car in this position, and take the total end thrust on the couplings of the car during the time the car is tilted at any angle to the horizontal in either direction. One side of the cradle is provided with heavy structural steel brackets which carry the door opening mechanism, two deflecting baffles, and baffle operating mechanism. Between these brackets and opposite the grain door is a deflecting hopper or chute to insure the grain being carried well into the centre of the receiving hopper. Steel gratings are provided to protect the chute and to cover all the open spaces around the unloader. Flexible deflectors are also provided to prevent any spillage of grain along the side of the walls of the car, or in any manner except into the receiving hopper. A closed operating cab from which all movements of the unloader are controlled is placed in a fixed position opposite the grain door, and at an elevation from which all movements of the grain can be observed.

The cradle consists of two heavily built web plate girders, the lower portions of which are formed at the centre into a circular tread which rests on steel cast tracks supported on a heavy concrete foundation. These girders are braced rigidly in a horizontal plane, and also at right angles to the axis to prevent side flexure, and to make them act together as a whole rigid tilting platform. They are designed to take a maximum loaded box car estimated to weigh 180,000 lb.; the girders being able to take this load with the horizontal axis tipped to 45 deg. from the horizontal in either direction. The girders are also designed to take a 380,000 lb. locomotive when in the horizontal position and with the end pins in place.

### The Operating Machinery

The tipping machinery consists of a 75-hp. wound rotor motor, equipped with a full torque solenoid brake, driving




**Baffles Deflect the Grain Toward the Doors**

the main operating pinions through a worm and worm wheel, equalizing gear and bevel gears. Two pin-connected struts are fastened to the cradle, each having, respectively, a rotating axis at a point beyond each end of the circular tread. These struts are equipped with cast steel racks engaging the main operating pinions. The racks and struts are provided at the outer end with guides when in the lowered position, as at this time the yoke or carriage maintaining alinement between the pinion and the rack are at the upper end of the strut close to the connecting pins. The ends of the cradle are also guided by rollers at each end to assure an

alinement of the track rails after tipping operations are completed.

Four end locks are provided, each consisting of heavy steel pins, one at each corner of the cradle. The pins are pointed at the ends for easy entrance into the castings bedded in the concrete abutments, and are operated by a 5-hp. motor through a screw and spur gear. They are designed to take the weight of a loaded car or engine coming on or off the cradle and give a final alinement to the rail in both the horizontal and vertical direction. They are interlocked with the bumpers or car clamps so that they cannot be withdrawn until the car is centralized on the cradle, and in the reverse, the bumpers cannot be lowered until the end locks are driven home; thus preventing any accident due to the possibility of running a car or engine on or off the unloaders, excepting when the cradle is supported at the ends by the four interlocking pins.

The bumpers or car clamps are arranged so that the car does not have to be spotted in an exactly central position on the unloader, but can be pulled on the unloader into any position within two or three feet, and will be pushed into a central position by the bumpers. They are also designed so that practically any length of box car can be clamped in a central position on the cradle.

The clamps or bumpers at each end consist of two steel cast slides connected to a pair of tension and compression links capable of rising to the level of the car coupler and then traveling forward, forcing the car to a central position when the bumper at the other end will strike the coupler and clamp the car. The front slide, that is, the one nearest the transverse centre line of the unloader, is fastened to a wire rope coiled upon a drum, which is in turn clamped with a retarding torque sufficient to hold the slide in a fixed position. The rear slide, which is definitely operated by a screw, is, at the same time, lifting the tension and compression links to the required height. When this has occurred, the two slides come together and travel forward until the car is clamped at both ends. The slides are operated simultaneously at both ends by a single 10-hp. motor operating the screws and traveling nuts through a pair of spur gears.

In applying the clamping device to the couplers of the car, the component of the weight of the car and grain along the rails is taken on the coupler, which is designed for such loads. The bumpers were designed for a maximum load of 127,500 lb. and work very efficiently, allowing practically no end play when rocking the car.

When the car has been clamped in a central position and the ends locks are removed, an interlocking switch comes into operation, allowing the door opener to be operated, the cradle to be rotated, and the baffles to be inserted. The door-opening mechanism consists of two steel cast pressure arms, cast integrally with spur gear quadrants, pivotally mounted on trunnions and rotated by spur pinions from a common shaft driven through worm gearing by a 22-hp. motor. Means are provided for adjusting the width of the pressure arms to suit the varying width of door openings and are arranged so as to strike the door as close to the door posts as possible. When the pressure arms first touch the door, their lower ends are kept above the elevation of the highest car floor and are so arranged that a slight pressure on the door releases a telescopic arrangement at the bottom of the arms, allowing an extension to come down until it strikes the door sill. By this means the pressure is exerted over the total height of the door regardless of the elevation of the car floor and as close to the door posts as possible, thus avoiding any undue damage to the grain door. This, in itself, is quite an economy, as doors were invariably broken by the old hand method.

The opener enters the grain with an upward and inward movement, carrying the door above the grain toward the roof of the car and clear of the flow. The pressure of the grain against the door is released by the leakage of grain into the hopper, which occurs as soon as the smallest opening is effected, and the outward flow of grain allows an easy clearance space through which the door can be pushed. During this operation about ten per cent of the grain in the car is discharged into the hopper.

While the door is being held up inside the car by the opener, the cradle is tilted through an angle of about 20 deg. and about another 25 per cent of the grain is discharged into the hopper, the remainder running down toward the other end of the car. The baffles are arranged so that they are tilted with the car and cradle, and while the car is in this position the upper baffle is inserted into the car as far as possible without crowding on the grain. The car is now tilted to an angle of about 40 deg. in the other direction, when about another 50 per cent of the grain strikes the baffle and is discharged into the hopper. The baffle which is in the car, and which was in the upper position, is now in the lower and can be withdrawn easily. At the same time the other baffle, which is now in the upper position, can be inserted, and as only 15 per cent of the grain remains in the car, the baffle can be pushed forward over the floor of the car until the nose reaches the far side. The car is now tilted through the maximum angle in the other direction when the last remaining portion of the grain is emptied into the hopper and the cradle can be brought into the horizontal position and the baffle withdrawn.

The baffles consist of a pair of plated rectangular structural frames of right and left hand, having their faces at right angles to the floor of the car, and capable of being slid into the car so that the rectangular face, or the trace of the plane of the baffle, is at 45 deg. with the longitudinal axis of the car. As stated before, this gives a trough having an angle of slope of 30 deg., when the floor of the car is tilted to 45 deg. The grain will flow readily down this trough out of the car. A wire rope attached to the front end of each baffle, passes round a grooved operating drum and thence to the rear end of the baffle, so that the baffle can be pulled in or out of the car by rotating the drum. The rear end of the baffle is guided at its upper and lower ends in tracks having a setting and curvature specially designed to keep the overall width of the unloader down to a minimum; while the front end passes through a pivoted yoke so that the baffle is held in its correct location for any position in or out of the car.

At the time of entry, the baffle is at least three inches above the highest car floor, but as it is driven forward is lowered by a screw and nut until contact is made with the floor and the weight is relieved from the sliding nut, after which any further driving forward of the baffle only causes the sliding nut to travel up the shaft without altering the elevation of the yokes. The back end is flexibly retained in its tracks in such a manner that the lower edge of the baffle makes contact with the car floor along its entire length. To further prevent the escape of grain to the lower end of the car, a flexible canvas sealing strip is attached to the bottom edge.

To prevent the flow of grain from traveling too far down the baffles, along the baffle track, and out of the hopper, spring doors are provided to seal the entrance of the baffle and to close the opening when the baffle is fully withdrawn. Flexible, hand operated, deflecting baffles are arranged to prevent leakage of the grain along the sides of the car, and deflecting plates are provided under the car door to carry the grain well into the centre of the receiving hopper. Steel gratings are also provided to protect the fixed hopper and to cover all spaces around the unloader, as well as to catch any large foreign substances which might come out of the car with the grain.

Throughout the design of the unloader, the choice of type and the choice of method of operation were, to a large extent,

governed by the desire to obtain a maximum safety of operation, and particular attention was paid to features governing this requirement. The cradle is in stable equilibrium under all conditions of loading, so that if a breakage should occur in the tipping mechanism, the car and cradle will come to a horizontal position without damage. All power transmission is made through self-locking worm or screw gearing, so that motion cannot take place unless it is so intended by the operator. The operations are electrically interlocked, so that they have to be carried out in proper sequence, and so ordered that damage cannot occur to either the car or the unloader. Limit switches are also provided, where necessary, for limiting the travel of each mechanism.

A completely closed operator's house is placed at a good elevation opposite to the car door, and is provided with glass windows so that the operator can, at all times, observe the process of unloading. The house contains the complete electrical control board, controllers, and resistances, so that the operations are under the direct control of the operator.

### Time of Operation

The average time taken by the various operations in unloading a car of wheat is the time taken to remove the empty car and spot a loaded car on the unloader platform depends, in a large degree, on the trackage layout. At the Canadian National Railway's elevator this occupies about three minutes, and the results obtained by observation show that where wheat is being unloaded, and no delays in distribution occur, it is easily possible to unload at the rate of eight cars per hour. When unloading oats, the time of operation is about one minute longer, as the car requires at least one extra tipping of the cradle. Further, the time of operation over long periods of unloading is certain to be increased by delays incidental to distribution and other causes. Results, however, show that about 250 cars can be unloaded in a ten-hour day on four unloaders at the Canadian National Railway's elevator, or an average of six and one-quarter cars per unloader per hour.

The average rate of unloading in an elevator equipped with multiple pits and having a pair of power shovels at each pit is about one car per hour for a ten-hour day, while the unloader has an unloading capacity of at least six cars per hour over the same period. The average unloading staff in a house equipped with a number of pits is approximately two men per pit, while on one unloader, an operator, one attendant and two laborers, a total of four men, are required.

As one unloader will do the work of six hand pits, the saving of labor is represented by 12 men on the hand pits against four on the unloader, or eight men, and the monetary saving is in the same ratio, as the shovelers can be put on the unloaders as operators with very little training. Assuming a period of work during the year equivalent to the employment of the maximum staff for 200 days, the saving in labor will amount to 1,600 men-days. Assuming a rate of $5 per day, this would amount to a saving of $8,000 per year per unloader. There is also a further saving due to the grain doors being removed undamaged. Maintenance costs are smaller than for an equivalent number of power shovels. The labor turnover and the danger of tying up operation by strikes is naturally lessened on account of the very great improvement in working conditions. Power costs are rather less for one unloader than for six shovels. The initial cost of installation will, of course, depend upon conditions at different elevator sites, but will in many cases permit of a saving due to a less expensive trackage layout.

The question of the economy of installation in existing elevators is one which would have to be studied for each separate case by expert elevator engineers. The writer believes, however, that where a large volume of grain is handled a study of the question would be well worth while and that unloaders can be installed to advantage.

The unloaders were designed by the Dominion Bridge Company, Limited, in collaboration with C. D. Howe and Company, consulting engineers of Port Arthur, and were built and erected by the Dominion Bridge Company, Ltd.

## Group Insurance for New Haven's Subordinate Officers

THE NEW YORK, New Haven & Hartford has contracted with the Travelers Insurance Company of Hartford, Conn., for life and accident insurance for its officers below superintendent, to be paid for in about equal shares, half by the company and half by the insured individual; and has given all eligible persons until October 1 to accept the plan, which provides for group insurance at very low rates. At least three-fourths of the eligibles must join in the movement in order to make it effective, this being a requirement of the statute under which group insurance is authorized.

This offer of the company was announced by C. L. Bardo, general manager, at Niantic, Conn., a seashore resort, last Sunday, where a dinner was given by the company to the officers and their wives, followed by baseball and dancing. The scheme is confined to "supervisory and subordinate officials" in the transportation, mechanical and maintenance of way departments. In brief, it provides for life and accident insurance, without medical examination, to remain in force so long as the person insured remains in the employ of the company and pays his share of the premiums. If he leaves the employment, he may continue his insurance without medical examination by an arrangement with the insurance company. The insurance covers death, permanent and total disability, and dismemberment. The railroad will contribute approximately one-half of the cost "in appreciation of the loyalty of the company's supervisory forces and to show a helpful interest in matters involving the welfare of its employees and dependents."

The company has already paid the premium for the insurance, covering over 2,000 employees, up to October 1. About 1,000 of these men were present at Niantic, and next Sunday the plan will be similarly explained to another group of 1,000, at a second outing to be held there. It was necessary to have the outing in two sections in order that all might have an opportunity to attend, without leaving the railroad unprotected at any point.

In a circular explaining the plan, it is stated that the life insurance of employees whose pay is $150 a month or less (Class A) is $1,000; more than $150 and up to $200 (Class B) insurance $1,500; Class C, from $200 to $250, insurance $2,000; Class D, $250 to $300, insurance $2,500; Class E, more than $300, insurance $3,000. The principal sum of accident insurance in each case is the same as the amount of life insurance; thus the totals of the classes, with the monthly cost to the employee in each class are as follows: Class A $2,000, $0.75; Class B $3,000, $1.15; Class C $4,000, $1.50; Class D $5,000, $1.90; Class E $6,000, $2.25.

If an insured employee becomes wholly disabled by bodily injuries or by disease before he is 60 years old, no further premium will be collected and the amount of his life insurance will be paid to him, either in a lump sum or in yearly instalments extending over a series of years, up to 20 years, as chosen by him. Indemnity for loss of hands or feet or sight of eyes is adjusted as is customary in accident insurance policies. Premiums will be deducted from an employee's pay by the paymaster, saving the individual all care in connection with that detail. After October 1 employees can join only by submitting to the insurance company's regular medical examination.

The offer applies on the Central New England as well as on the New Haven road; insurance ceases when an individual leaves the employ of the company or when he ceases to pay his monthly premium.

## Coal Bills Passed by Senate

WASHINGTON, D. C.

THE CUMMINS BILL, to restrain profiteering in coal by authorizing the Interstate Commerce Commission to issue priority orders in favor of or embargoes against interstate shipments of coal for which the owner has charged or the purchaser has offered what the commission considers to be an unreasonable price, was passed by the Senate on September 7 by a vote of 40 to 7, after it had been amended to limit the period during which it is to be effective to six months instead of a year and to provide that nothing in the bill "shall be construed as changing or amending the present law as to assigning cars for handling or transporting coal on contracts entered into prior to July 25, 1922, at not more than $2 per ton f.o.b. cars at mine."

The bill proposes to regulate coal prices indirectly through exercise of the powers to regulate the railroads and as described by Senator Cummins: "Broadly speaking, the immediate purpose is to prohibit a carrier from carrying coal which is sold at an exorbitant price," in the same way that the power to regulate commerce has been exercised in other laws to prohibit the interstate transportation of certain things held by Congress to be undesirable.

As the Winslow bill, intended to accomplish the same general purpose, as passed by the House a week before, contained numerous different provisions, the two bills were sent to conference.

The Borah bill to provide for the creation of a fact-finding commission, to be appointed by the President to make an investigation of the production, transportation and distribution of coal, was also passed by the Senate on September 8 after it had been amended to provide for a separate report on the anthracite industry. A similar bill had also been passed by the House. A strong effort was made to omit from the bill the direction to the commission to report on the advisability or wisdom of nationalizing the coal industry, or of government regulation, but the amendment for this purpose was defeated.

There was a protracted debate on the priority bill in the Senate, during which the bill was attacked by several, on the ground of opposition to price-fixing, on the ground that the price-fixing is indirect, and on constitutional grounds. Various senators who were obviously speaking from the standpoint of the coal operators or of interests that have contracts for coal at a low price, objected on the ground that it would divert coal from those contracts to other purposes and several attempts were made to amend the bill so as not to affect such contracts. Senator Kellogg obtained an amendment to include within the commission's jurisdiction for the purposes of the bill vessels suitable for the transportation of coal on the inland waters of the United States. Senator Sutherland of West Virginia and Senator Dial of South Carolina objected to the bill on the ground that it was intended to protect those who had not had the forethought to make contracts last spring. Senator Dial talked a good deal about some contracts which he and various cotton-mill owners had made at $1.90 a ton. When asked if a cotton mill should have preference over domestic consumers, he said that if the cotton mill employees are turned out of work they will perish by starvation and he "reckoned" it would be about as painful to perish in that was as to freeze to death.

In reply to the contention that certain mines claim they cannot get cars to deliver contract coal while others are able to get cars for coal which they sell at high prices, Senator Cummins pointed out that under the present law the priority given to certain classes of consumers may take cars away from certain mines but that that is done regardless of the price factor, while to undertake to protect contracts would also protect contracts made by speculators at unreasonable prices. He said, however, that he had no objection to the amendment as finally proposed by Senator Dial, after he had inserted the $2 limit, because it does not mean anything. "The commission now," he said, "has the authority to say that if coal is intended for a certain purpose, cars cannot be furnished for the transportation of that coal until the coal that is required for a more important purpose has been furnished."

Senator Sutherland, after a defense of the coal operators, said he supposed there may be operators who had contracted to sell their coal at $2 a ton who would welcome the interference of the Interstate Commerce Commission and the diversion of their product to some one who was willing to pay $4 or $5 a ton, if such prices should be fixed, rather than to ship their coal to the customers to whom they had contracted it at $2. Senator Cummins replied that if that were possible it would not be brought about by this bill, but by the existing law, and that it would not comport very accurately with the description which the senator from West Virginia had just been giving of the coal operators. He admitted, however, that if the coal were diverted by a priority order the operator would not be obliged to sell it at the contract price; he would only be required to sell it at a fair and reasonable price.

In arguing the constitutionality of the bill, Senator Cummins discussed at length the various Supreme Court decisions in cases in which it had sustained a prohibition against interstate transportation where "the use of interstate transportation was necessary to the accomplishment of harmful results." He said that the fact that the distortion of commerce resulting from unreasonable prices for coal is effected necessarily through the interstate transportation of the coal differentiates this bill from the child labor law cases, where the law was held unconstitutional by the Supreme Court on the ground that the mere fact that goods produced by child labor were intended for interstate transportation, does not make their production subject to federal control under the commerce power. The bill, he said, is directed entirely against the use of transportation. Senator Kellogg also made the point that interstate commerce is directly affected by the price of coal because the railroads are such large purchasers of coal.

Senator Reed of Pennsylvania said that the laws which the court had sustained dealt with the transportation of articles held to be evil in themselves, whereas the transportation of coal is not an evil and the charging of a high price is not interstate commerce.

The Senate bill differs from the House bill in that in it Congress declares the existence of the emergency, and the President is authorized to terminate it, while in the House bill the President is authorized to declare an emergency and so revive its provisions at any time prior to January 1, 1924. The Senate bill acts entirely upon common carriers, while the House bill is not so restricted. The House bill provides a penalty for soliciting, accepting or receiving any concession or discrimination in respect of car service, or for the procuring of priority orders by misrepresentation or misuse of priority orders.

The conferees representing the Senate and the House reached an agreement on Wednesday which represents a combination of the Senate and House bills. The period during which the act shall be in effect was changed to 12 months and the principle of the Senate bill that the act should apply only to interstate shipments was adopted. The conferees were expected to make their report on Thursday.

# Separate Peace to End Strike on Some Roads

## Strikers Give in on National Settlement and Seniority— Roads Operating 50,000 Miles to Accept

TERMS OF AGREEMENT for the settling of the shop employees' strike were agreed upon in Chicago this week by the heads of the policy committee of the shop crafts' unions and railways having about 55,000 miles of line. The exact list of railways which have signed the agreement has not been made public, but it is known to be with some important exceptions the 52 railways which made to the shop employees the proposition for settlement at the meeting in New York.

Following the meeting of the Association of Railway Executives on August 25, the list of railways which made the proposition at that time was given in the *Railway Age* for September 2, page 418. Among the railways which joined in the proposition at that time but which are known not to have signed the agreement made this week are the Chicago Burlington & Quincy, the Northern Pacific, the Erie, the Norfolk & Western, the Chesapeake & Ohio and the Chicago, Rock Island & Pacific. It is understood that at least one or two important lines which did not join in the proposition made in New York will sign the new agreement.

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**There May Be Some Good Arguments Against the Strike Injunction, But This Is Not One of Them**

The list of roads that already have signed the statement has not been given out because the labor unions have authorized the heads of the labor organizations on the individual railways to present the plan to all of the individual railways for the purpose of getting as many railways as possible to accept it.

### The Shopmen's Terms

The terms of settlement finally agreed upon are based upon the original plan offered by the 52 railways two weeks ago, although some important modifications have been made, for example the commission proposed in the plan adopted by the railways in New York to which was to be referred questions arising regarding relations of the men who returned to work to the strikers was to have been composed of representatives of the train service brotherhoods and the railways signing the agreement. Under the plan adopted at Chicago this commission will be composed of six representatives of the shop crafts' unions and six railway officers representing the roads signing the agreement. The text of the terms of settlement agreed upon in Chicago is in full as follows:

"First—In order to bring to an end the existing strike of employees upon the undersigned railroads and relieve the country from the adverse effects thereof and to expedite the movement of essential traffic the following memorandum of agreement is made upon the understanding which the parties hereto accept that the terms hereof shall be carried out by the officers of the companies and the representatives of the employees in a spirit of conciliation and sincere purpose to effect a genuine settlement of the matters in controversy referred to below. This paragraph does not apply to or include strikes in effect prior to July 1, 1922.

"Second—All men to return to work in positions of the class they originally held on June 30, 1922, and at that same point. As many of such men as possible are to be immediately put to work at present rates of pay, and all such employees who have been on strike to be put to work or under pay not later than thirty days after the signing of this agreement, except such men as have been proven guilty of acts of violence which in the opinion of the commission, hereinafter provided for, shall be sufficient cause for dismissal from service.

"Third—The relative standing as between themselves of men returning to work and men laid off, furloughed or on leave of absence, including general chairmen and others who were as of June 30, 1922, properly on leave of absence, will be restored as of June 30, 1922, and they will be called back to work in that order.

"Fourth—If a dispute arises as to relative standing of an employee or if any other controversy arises growing out of the strike that cannot be otherwise adjusted by the carrier and said employee or the duly authorized representatives thereof, the matter shall be referred by the organizations parties to this agreement, the employees or the carrier in the interest of any employees who may be aggrieved, to a commission to be established and constituted as hereinafter provided for final decision by a majority vote.

"Fifth—The commission referred to in Paragraph 4 hereof shall be composed of six representatives to be named by the chief officers of the organizations parties hereto and six railroad officers or representatives selected from and by the railroads agreeing hereto. This commission shall be constituted within fifteen days from the signing of this agreement and shall have jurisdiction to decide all cases that may properly be referred to into or before May 31, 1923, but not thereafter.

"Sixth—Inasmuch as this agreement is reached for the purpose of composing in a spirit of compromise this con-

troversy, all parties hereto agree that neither this settlement nor any decision of the commission above provided for, shall be used or cited in any controversy between these parties or between the railroad signing the same or any other class or classes of their employees in any other controversy that may hereafter arise.

"Seventh—Both parties pledge themselves that no intimidation nor oppression shall be practised or permitted against any of the employees who have remained at work or have taken service or as against those who resumed work under this understanding.

"Eighth—All suits at law now pending as the result of the strike to be withdrawn and cancelled by both parties."

### National Settlement Plan Abandoned

It will be noted at once that the decision of the labor leaders to offer this plan of settlement to all the railways and to make settlements with the individual railways which will accept it involves final abandonment of their stand in favor of nothing but a national settlement. It will also be noted that the men will be put back to work without the restoration of their seniority rights and that all questions arising concerning the relations between the present employees in the shops and returning strikers are to be referred to the commission which the agreement creates.

This latest "peace" movement was hinted at, announced and denounced in the press for several weeks, alternately affirmed and denied by almost everyone concerned and only reached a tangible stage when the convening of the "policy" committee of the Federated Shop Crafts at Chicago and the presence of certain railway executives in Chicago immediately prior to this meeting left little doubt as to the existence of some sort of a plan for the partial settlement of the strike. However, even after it became generally known, all of those who might know something of the details refused to talk for publication with the result that many and varied rumors were circulated. There were so many "guesses" in the press as to the terms of the new plan, the whereabouts of the leaders of the negotiating factions and the railroads involved, that it was not until September 13 that reliable information was available.

### Warfield Started Conference Which Brought Settlement

The conferences between a few railway executives and B. M. Jewell which resulted in the shop crafts' "separate peace" agreement were begun by S. Davies Warfield, president of the Seaboard Air Line, on September 2. In an interview given out on September 13, Mr. Warfield reviewed the negotiations as follows:

"At the meeting of the Association of Railway Executives, at which the resolution was passed breaking off negotiations for the settlement of the strike, I cast the four votes of the Seaboard Air Line against the resolution to leave a way open for direct contact with the shopcrafts leaders. It seemed to me unwise to close the door for the settlement of this strike at a time of great business and world-wide unrest. I was not convinced that the whole country must be made to suffer because of exaggerated views of the difficulties respecting new men who had accepted employment during a strike.

"After this meeting, negotiations continued between the brotherhood mediators and a small committee, headed by Daniel Willard, representing fifty-two railroads, the Seaboard being one. This failing in result, I was in position to meet and did meet Mr. Jewell the same day, and reopened negotiations directly with him and his associates. I urged dealing with individual roads, pointing out to Mr. Jewell that he could not defend a position based on declination to negotiate with railroads in position to settle on an acceptable basis simply because other railroads declined. Mr. Jewell stated he would consult his associates and decide whether they could proceed on the basis we discussed.

"Mr. Jewell, with two associates, met me in Baltimore on Sept. 2; we reached a tentative understanding. I then asked A. H. Smith, president of the New York Central Lines, if he would meet these gentlemen, and later communicated with Daniel Willard, president of the Baltimore & Ohio Railroad, who was out on his road. The presence of Mr. Smith, who came to Baltimore on two occasions, contributed largely to the result. After the conference with Mr. Jewell, and later with members of his Executive Council of Eight, an agreement was reached acceptable to the three railroads represented and to the shop crafts leaders. Other railroads, called over the telephones, tentatively agreed to go along on the same lines. The negotiations were closed on Sept. 5. Mr. Jewell called a meeting of the Policy Committee of the railway employees department to take action, Mr. Willard undertaking to present the conditions of settlement to a number of railroads. We found Mr. Jewell and his associates desirous of a fair and reasonable settlement of the existing differences.

### Strained Relations, Unfortunate

"Continued strained relations between the railroads and their employees is very unfortunate. If not permanently relieved, Government operation is likely to ultimately result. The newspapers announce that a cabinet officer, Mr. Hoover, and Interstate Commerce Commissioner Aitchison, in charge of car service, are to confer with the anthracite coal operators to determine with respect to priority orders to govern the transportation of coal. With labor troubles on the one hand, and on the other the government now largely directing railroad operation, the outcome is not encouraging. If the railroads cannot themselves settle disputes with their own employees and determine among themselves what is to be done in respect to the hauling of coal to care for the nation's needs without the necessity for the issuance of orders by a government agency, where will we finally land?

"Regional railroad labor boards should be properly and promptly established. A board should be named by each group of railroads that operate in each of the four rate-making districts into which the commission has divided the country; the men of each group of railroads also to organize boards to confer with the regional railroad boards. Negotiations could be successfully carried on and disputed questions settled if approached in good faith.

"The ill effects of this strike have not been confined to the railroads. Judge Gary made a 20 per cent increase in the wages of steel employees to prevent them from accepting employment with the railroads which were advertising for them. Having occasion to confer with officials of a number of car manufacturing companies now building cars for the railroads, I found that a number of shops were nearly closed down; in others, labor difficulties caused increases in wages from 20 per cent to 33 per cent to hold their men, many leaving to take employment in railroad shops. Column upon column of newspaper advertisements by railroads for men told the story. This could not continue without serious disruption for the industrial labor structure. A shortage of equipment through a continuance of the shop crafts strike has thus been augmented by the failure of car manufacturers to deliver cars because the railroads have been taking their men, an apt illustration of the 'vicious circle.'"

## Lull in Violence One of Week's Developments

Probably as a result of the insistent "peace" talk of the past week and the militant entry of the government into the controversy, there has been a lull in the violence which has heretofore characterized the strike. However, reports still continue to be made of the bombing of railroad property and workers' homes, the burning of bridges, the attempted wrecking of trains and numerous riots and similar disturbances directed at the intimidation of loyal or new employees.

Bombs or dynamite were used during the past week in attempts to destroy the track of the Chicago, Milwaukee & St. Paul near Perry, Ia., an Atchison, Topeka & Santa Fe bridge near Verdemont, Cal., a Southern Pacific train at Los Angeles and homes of two Missouri, Kansas & Texas shopmen at Parsons, Kan., two New York Central shopmen at Ashtabula, Ohio, and a Rock Island shop foreman at Valley Junction, Iowa.

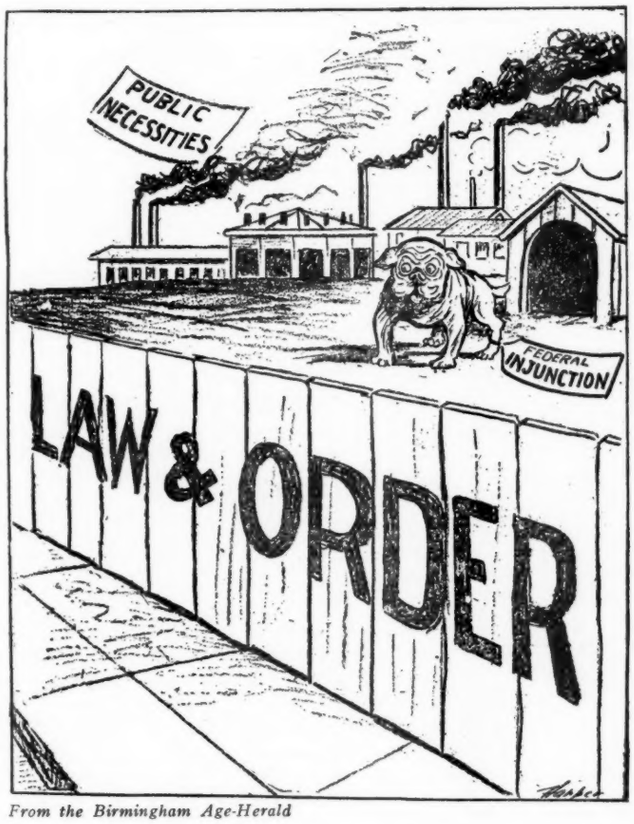
An attempt to wreck a train was likewise reported from St. Charles, Mo., on the Wabash.

The burning of bridges, a form of violence in particular favor with strikers and their sympathizers in the southwest, continued with reports of two instances of this character,

one on the Midland Valley at Bixby, Okla., and the other on the St. Louis-San Francisco at Altus, Okla.

Rioting in which loyal or new employees, railroad guards, strikers and strike sympathizers were involved were reported during the past week from Parsons, Kan., Chicago, Galesburg, Ill., Terre Haute, Ind., and Ft. Worth, Texas. At Parsons, Kan., it became necessary to call upon state troops to patrol railroad property following the disorders at that point and after an investigation disclosed that strikers had been hired as deputies.

With the granting of injunctions throughout the country restraining the strikers from interfering with the operation of trains, court actions have been numerous and in the




*From the Birmingham Age-Herald*

**He'll Not Bite You, If You Stay on Your Side of the Fence**

majority of cases unfavorable to the strikers involved. At Memphis, Tenn., four men were indicted by the grand jury for killing a Frisco employee and according to reports from that point have confessed to many other acts of violence in that territory. At Roodhouse, Ill., the scene of considerable trouble during the past three weeks, eight strikers were indicted by the grand jury for an alleged assault upon a Chicago & Alton roundhouse foreman at that point. At Oklahoma City federal operatives have announced an investigation of acts of violence in Oklahoma, particularly the destruction of bridges and other attempts to interfere with the operation of trains. In many cases former employees have been convicted of violations of federal injunctions and sentenced to prison terms.

### Maliciously Derailed Says I. C. C. Report

The Interstate Commerce Commission has issued the report of its Bureau of Safety on the derailment at Gary, Ind. on the Michigan Central, August 20, when an American Express (merchandise) train was maliciously derailed, resulting in the death of the engineman and fireman. As heretofore reported, the cause was malicious removal of spikes, of which 30 had been withdrawn from the ties on the outside of the left rail. The spike holes were in no way distorted nor were the spikes bent. No evidence was found of any dragging equipment nor of any fault in the track nor the locomotive. No tools had been taken out of the trackmen's tool house although it is plain that the spikes had been drawn with a claw bar.

### Dynamite Lehigh Valley Reservoir

A large reservoir of the Lehigh Valley Railroad near Packerton, Pa., was damaged by an explosion of dynamite on the night of September 6, and its contents, many millions of gallons of water, run off. The reservoir was one of ten acres extent, averaging 22 ft. in depth. The railroad police at once began searching for men suspected of having stored dynamite near the scene of the outrage.

### Saving the Strikers "Spotless Record"

At Asheville, N. C., on September 9, three striking shopmen of the Southern Railway were each sentenced to seven years' imprisonment, having been found guilty of abducting one of the new employees, age 19, and beating him with whips. On September 8, in the Federal Court at Richmond, Va., two strikers, charged with violating the injunction against improper interference with new employees, were let off by Judge Groner, the judge saying that he "did not wish to mar the spotless record" which had thus far been maintained by the strikers in his district. But, he told the accused men to leave the state.

### Sermon Alleged to Violate Injunction

A clergyman, pastor of a church at Quincy, Ind., is among the persons complained of in an application made before the court by the Chicago, Indianapolis & Louisville last week, naming alleged violators of the injunction against illegal encouragement of strikers. It is charged that the clergyman, in a sermon in his church, said that he was a union man and that no man had a right to take a job that a union man had vacated; also, that he told one of his congregation, who worked for the railroad company, that he ought not to do so.

### Recruiting Continues

Railroad shop forces continue to increase, by the return of strikers to the service and by the employment of new men. Net gains by days are reported by the Association of Railway Executives as follows:

| | | | |
|---|---|---|---|
| September 1 | 2,419 | September 7 | 4,124 |
| September 2 | 1,114 | September 8 | 4,601 |
| September 4 | 3,317 | September 9 | 2,922 |
| September 5 | 2,927 | September 11 | 4,170 |
| September 6 | 4,400 | | |

### The Strike Situation in Chicago and the West

Despite the widespread talk of peace in the shopmen's strike, conditions in the shops of the Western lines have continued to improve during the past week, both in the number of men at work and in the quantity and quality of the work turned out by the existing forces. A general picture of conditions on the western roads was painted by the Western Presidents' Committee on Public Relations of the Association of Railway Executives when it said on September 10:

The best evidence regarding the strike situation on the railways is afforded by the steady increase in the number of men employed in the shops and the large volume of business being moved.

The number of men employed in the shops of the western railways had increased on September 8 to 103,870, or 65 per cent of the number before the strike began. How steadily and rapidly the number of men at work has increased is shown by the following figures:

On August 1 the number of employees was 58,073, or 36.5 per cent of normal. On August 15 it was 76,886, or 49 per cent of normal; on September 1 it was 96,593, or 61 per cent of normal,

and since then the increase has been 7,283 men, making the present force 65 per cent of normal.

The volume of freight now being moved by the railways of the United States is approximately as large as in the same part of the year 1920, when it was the largest in the history of the country. The total carloads moved in the week ended August 26 was 890,838, which was 62,000 carloads larger than in the same week of 1921, and 38,487 more than in the first week of August. Since the week ended August 26 there has been such a large increase in the amount of coal moved that, as already stated, the total traffic now being handled is about equal to the record business of 1920.

On September 14 the Western Presidents' Committee on Public Relations called attention to the fact that "the number of carloads of freight moved for the week ended September 2 was only 9 per cent less than the largest number ever moved in any week in history which was in October, 1920," adding,

"The number of men employed in the shops of the western railroads on September 13 was 109,513 or 69.3 per cent of the number employed before the strike began. This was an increase of almost 5,643 men since September 8."

## Embargoes Declared in East as Anthracite Mines Open

Congestion already developed, together with the prospect of much heavier traffic when anthracite mining, resumed this week, reaches normal, has resulted in embargoes on a number of Eastern roads. Of these the Lackawanna, the Lehigh Valley and the New York Central have placed restrictions only against traffic not ordinarily moving over their rails. Their embargoes are designed only to prevent diversion of traffic from other roads. The Baltimore & Ohio has embargoed all traffic received from connections and originating at points in the mining regions, excepting food, fuel and kindred commodities. Certain exceptions to the embargoes of the Baltimore & Ohio and the New York Central will be allowed under the "permit" system. The embargoes of the New York Central, the Lackawanna and the Lehigh Valley do not cover food or fuel except Pacific Coast perishables which do not under normal conditions move over their lines.

The Erie, however, has gone a step farther. It, too, has closed its lines to traffic diverted from other roads and, in addition, has embargoed Pacific Coast fruit and vegetables shipped after September 10 for points east of Hornell, N. Y. The Erie has practically a monopoly in the handling of this business to the New York market and, furthermore, receipts of fruit and vegetables from the Pacific Coast in this market are running in excess of 25 per cent of the total. Consequently, the prospective loss of these commodities has caused considerable concern in New York. The embargoes of the New York Central, the Lehigh Valley and the Lackawanna, as noted above, prevent the turning over of any of this business to them.

### Endeavor to Get Pennsylvania to Take Over Traffic

The marketing of Pacific Coast perishables in New York is built up around the Erie's piers 20 and 21, North river. There the goods are unloaded and there they are auctioned off to buyers. The diversion of this traffic to the terminals of other roads would disrupt this market and, accordingly, the Erie has offered the use of these piers free of charge except for labor to any road which will take over this traffic. At a meeting on Wednesday afternoon between representatives of the Fruit and Produce Trade Association and officers of the Pennsylvania, this company expressed its desire to do everything in its power to handle the business. Definite details of just what the road could offer, however, were not decided upon and a committee from the railroad and the produce association was chosen to consider the matter again on Friday. Corporation Counsel O'Brien representing the City of New York, attended the Wednesday meeting.

There has been some adverse comment concerning the declaring of these embargoes, particularly that of the Erie against Pacific Coast perishables. City officials of New York have interested themselves in the matter and unless some other road will agree to take over this business it seems likely that shippers and produce dealers, aided perhaps by New York City officials, will lay their case before the Interstate Commerce Commission. Roads which handle this business from the Pacific Coast to Chicago, also, will doubtless be interested in whatever solution is arrived at.

### The New York Central's Statement

The statement of the New York Central relative to its embargo follows:

The embargo is made necessary as a precaution against the overcrowding of our lines, yards and terminals by accumulations of freight due to abnormal diversion from connections unable to handle it, which roads already have embargoes in force. The "permit system," whereby shippers may apply to the freight traffic manager at Chicago or the general freight agent at New York and secure authorization for the movement of shipments, will give control calculated to afford the utmost protection to regular business and exclude temporary diversions which might cause congestion and, consequently, reduction of the very heavy tonnage handled promptly during the past 60 days.

The embargo covers all freight, carload and less than carload, originating beyond the rails of the New York Central System's roads, from connections at Clearfield, Pa.; Buffalo, N. Y.; East Buffalo, N. Y.; Gardenville, N. Y.; Black Rock, N. Y.; Suspension Bridge, N. Y.; from Niagara frontier stations or junction points west thereof, destined to points east via the New York Central Railroad. The various roads of the New York Central System, including the Boston & Albany Railroad, the Michigan Central Railroad, the Cleveland, Cincinnati, Chicago & St. Louis Railway, the Pittsburgh & Lake Erie, The Toledo & Ohio Central, the Indiana Harbor Belt Railroad, the Chicago Junction Railroad, and their constituent lines, are not affected in the loading of their regular business.

The exceptions to the embargo comprise: Food for human consumption, live stock, food for live stock, perishable products, coal, coke, fuel oil, petroleum products, railroad material, freight consigned to offices of the United States government, newsprint paper, fertilizer, food containers and shipments restricted by the embargo when they are covered by permits issued by W. A. Terry, freight traffic manager, Chicago, Ill., and G. C. Woodruff, general freight agent, New York City.

Shippers in territory served by the New York Central Lines, including New England, will appreciate that this embargo is for the protection of regular traffic which has been moved with promptness in increasing quantities during recent weeks and that the embargo is calculated to safeguard operation against disturbances or temporary heavy diversions from other roads.

Whatever may be the general opinion about these embargoes, there can be no doubt but that traffic conditions justify some such steps. The way perishable and live stock traffic is being handled may be taken as an index to general conditions and, according to information received from official sources, this business is not moving according to schedule—at least into New York City.

### Anthracite Mining Resumed

The first trainload of anthracite coal to reach New York since the resumption of mining in the anthracite fields came into the Lehigh Valley's terminal at Perth Amboy, N. J., early Tuesday morning. The mine operators seem to be having some difficulty in reassembling their forces in spite of the termination of the strike. Many strikers, it is reported, have since the cessation of mining drifted into other lines of work and not a few have returned to their homes in Europe. Then, too, the mines and breakers have not been kept ready for instant use during the period of the strike and some days will be required before this condition ceases to be a retarding factor. It is not thought that maximum production of anthracite coal can be reached for a week or two.

# Legal Battle Over "Daugherty Injunction" Opens

## Shopmen Lose Fight to Have Restraining Order Dismissed— Government Attitude Unchanged

THE LEGAL BATTLE over the now-famous "Daugherty injunction" opened on September 11 in the courtroom of Federal Judge James H. Wilkerson at Chicago. The temporary injunction, granted to Attorney-General H. M. Daugherty on September 1, was continued by Judge Wilkerson for 10 days and the motion of Donald R. Richberg, counsel for B. M. Jewell, president of the Railroad Employees Department of the American Federation of Labor, that the temporary injunction be dismissed was denied. Attorney Richberg had attacked the legality of the government's action in seeking the restraining order and had directed many of his remarks at Attorney-General Daugherty, whom he charged with betraying the court.

While Judge Wilkerson did not pass finally upon the Richberg motion to dismiss the injunction, he did intimate that he did not intend to comply with this request. The language the judge used was that he was "not satisfied that the bill (the government petition) fails to state a ground for any relief." The judge indicated however that he would hear additional argument on the motion later.

In extending the temporary injunction for 10 days, Judge Wilkerson did not attempt to pass upon the merits of the contentions of either the government or the defendant. The injunction would have expired at midnight if he had not acted.

Following the denial of the union attorney's plea for dismissal, Blackburn Esterline, assistant solicitor-general, continued with the government's fight to make the temporary injunction permanent. He presented three documents to the court. One was Decision 1036 of the Railroad Labor Board. The second was a general history of the strike, and the third an affidavit from Chester J. McGuire, secretary to one of Attorney-General Daugherty's aids. The affidavit contained a series of depositions taken from secret agents employed by the government, each of which depicted the alleged connection between the strike of the shopmen and various acts of violence, including murder, arson and sabotage of railroad property.

In the depositions offered by the government attorneys in support of their request that the injunction order be made permanent, 18 cases of murder, 44 assaults, 17 derailments, dynamitings, and burning of bridges, together with a list of various acts of sabotage and depredation covering 26 pages were recited.

After Attorney Esterline's recital of the acts of violence, a motion to strike the affidavit from the records was made by Frank L. Mulholland, another attorney for the labor leaders named in the injunction. He characterized the affidavits as "mere rumors." Judge Wilkerson reserved his decision on the point until all the testimony had been given in support of the affidavit, adding that mere heresay was not regarded as evidence.

A letter signed by the Postmaster General was also introduced by Attorney Esterline in which it was stated that 953 mail trains had been withdrawn since the start of the strike and that mail service on 82,912 miles of railroad had been adversely affected.

### Labor Attorney Argues for Dismissal of Injunction

Mr. Richberg submitted four points in support of his contention that the restraining order should be vacated. These were:

1. The government erroneously assumed the strikers violated law when they declined to abide by decisions of the Labor Board.
2. The open shop issue, cited as an important reason for seeking an injunction, is not one to be dealt with by the Department of Justice.
3. Federal courts have held that strikers have a right to attempt to recruit their ranks from among non-union workers.
4. The government failed to establish an unlawful conspiracy on the part of the strikers, as alleged in the injunction.

At the opening of the court's session Attorney Richberg was given permission to argue his motion for dismissal of the temporary injunction ahead of the government's petition for making the injunction permanent. He attacked the order as unconstitutional and unjustified, then made his speech denouncing the attorney-general.

After the court had ordered him to confine his remarks to the law in the case, Mr. Richberg proceeded to sketch his argument. Essentially, he said, the temporary injunction is based on the allegation that the officers of the shop crafts conspired to obstruct railroad transportation, and this allegation is based in turn on the presumption that the crafts are bound by law to obey the decisions of the Labor Board. Such a presumption, he said, is unjustified.

"Not only is there nothing to that effect in the Transportation Act, but if there were such a clause it would be unconstitutional," he continued. "Even if the Board's decisions were legally binding they could not be used to prevent the workers from withdrawing from service."

In support of this argument he quoted Senator Cummins, Representative Esch, and President Harding to the effect that "there is nothing of an anti-strike nature in this law."

Attorney Richberg called the court's attention to the public statement made by the attorney-general at the time of the temporary injunction, in which Mr. Daugherty asserted his purpose to fight "for the open shop."

"The attorney-general has no right to use the power of the government to fight 'for the open shop'," Mr. Richberg said. "Whether the open shop or the closed shop prevails is entirely outside the province of the attorney-general. It is a question which only the legislative branch of the government can pass on if it comes under the jurisdiction of the government at all."

The injunction fails to show, Mr. Richberg argued, that the shop crafts leaders conspired against the law. It simply calls their association "an unlawful combination," he said, without adducing proof. In fact, the combination is lawful, he continued, and not ground for court action.

Denying the existence of such a conspiracy by the railway unions and demanding that Judge Wilkerson vacate the injunction, Attorney Richberg built up his defense on the grounds that the government had failed to make a case against the unions, that the injunction is in violation of the Clayton Act and that it was obtained through misrepresentation for "ulterior and unlawful" motives.

Concerning the sabotage charges Attorney Richberg said, "The position of the shop crafts regarding vandalism or any acts of violence in connection with the strike has been repeatedly stated from time to time since the inception of the walkout. The railway unions have not only agreed that perpetrators of any violence in connection with the strike should be harshly punished but they also have sought to

co-operate with the proper authorities to prevent any illegal acts. The union leaders have time and again warned the membership against any lawlessness."

The usual number of legal citations were given by Attorney Richberg to sustain his contentions, the Clayton Act in particular being used frequently.

The first shot in the union's fight against the injunction came on September 9 when a motion to vacate the government's temporary restraining order against the shop crafts' union, so far as it applies to Mr. Jewell, and John Scott, secretary of the Federated Shop Crafts, was filed in United States District court. The action was begun by Attorney Richberg and was based on three general allegations, namely:

(1) That the complaint has not in and by its said bill made or stated such a case as entitled it in a court of equity to any relief against the defendants as to the matters contained in said bill, or any of said matters.

(2) That the relief prayed for in said bill, and granted in said restraining order, is that relief which, under the provisions of the act of Congress commonly known as the Clayton Act, no court of the United States, or judge, or the judges thereof, is permitted or empowered to grant.

(3) That relief was sought in said bill and was obtained in said restraining order for ulterior and unlawful purposes upon misrepresentation and suppressions of matters of fact and law, the disclosure of which was required by good faith.

## Government Discloses Sabotage and Conspiracy Data to Be Used in Trial

Details of the government's sabotage and conspiracy charges against the striking shop crafts were made public in a statement given out on September 11, disclosing the line of the government's testimony in the affidavits which will be presented to Judge Wilkerson during the injunction hearing. The statement said in part:

Since the commencement of the present railroad strike acts of depredation have been committed in practically every state and judicial district in the United States. The efforts of the perpetrators are concentrated upon the two ends—destruction and intimidation. The means to attain these ends are almost indescribable. In fact, one must believe that anything suggested to the imagination of the vandals of their conspirators was immediately put into effect.

The venom of the participants in this strike has not ceased with ordinary assaults, bombing, dynamiting, wrecking of trains, or minor depredations, but has been in many instances satisfied only with the taking of human life.

At least 25 murders have been reported. Many have indirectly met their death or been fatally injured through strike causes, and these results were not confined solely to those opposing the views of the shopmen now on strike. Many were men, women, and children whose only purpose was to travel from one point to another, sometimes because of necessity and sometimes for pleasure, but always with no thought of entering into the controversy.

In or about Needles, Cal., on the Sante Fe system, twelve trains were abandoned in the desert. Hundreds of passengers, men, women, and children, some 90 years of age and some as young as one day, and many sick, were required to live in almost unbearable heat for periods varying from one to four days.

It has become necessary to appoint approximately 5,500 United States deputy marshals to assist in the protection of interstate commerce and the United States mails. Approximately 950 mail trains have had to be discontinued; several roads have been compelled to discontinue trains in order that coal orders might receive priority, and many roads have placed embargoes upon perishable products. During the trouble in northern and southern California, it is estimated $75,000,000 damage was caused by inability of the carriers to transport fruit ready for market.

Dynamiting, bombing, setting fire to railroad property and bridges are a few of the most dangerous means adopted against the railroad companies.

Many derailments have occurred. The general scheme adopted has been to remove spikes from the tracks, often on curves, causing them to spread when subject to the pressure of a train.

The throwing of sticks of dynamite and bombs have come to be more than daily occurrences. At least 100 sticks of dynamite have been used and over 30 bombs thrown. Many of these were not destined for railroad property, some being thrown at workers, and others have exploded on and about their homes and sleeping quarters.

Switches have been tampered with. Several times, with a clear track showing, trains have run into cars on sidings, blocking tracks and causing considerable damage.

It would be almost impossible to enumerate the various assaults which have been perpetrated. Whippings were resorted to in practically every instance where strikers were able to lay their hands upon those whom the railroads have secured to take their places. When they could not be apprehended, stones were thrown at them. Pepper was sometimes thrown in the faces of women accompanying them. Shots were fired, and other acts, equally as detestable, were indulged in. Tarrings and featherings are included in the list, and in many cases.

The statement specifically named a large number of instances of the character mentioned. Practically all of these outbreaks have been described in previous issues of the *Railway Age*.

When hearings were resumed the following day, Attorney Richberg said, "I request that the attorney-general be required to explain who gave out this statement. It is nothing short of criminal libel. If any ordinary citizens were to make public such a statement, they would be liable to prosecution for defamation of character. I think the attorney-general should explain."

There was no reply and finally Mr. Esterline proceeded with his case, offering evidence supporting the contention that the shopmen's strike is in effect a gigantic conspiracy against interstate commerce.

## The Government's View of the Effect of the Shopmen's Strike

He read from reports by the secretary of agriculture purporting to show how the shopmen's strike had handicapped the transportation of the country's winter coal supplies and the bumper crops. In an affidavit which was read to the court, Secretary Wallace said that a questionnaire sent by the Department of Agriculture to 16,000 farmers and small-town retailers showed a coal famine in prospect as a consequence of the railroad strike. Farming sections generally have only one-fourth of the required supply of coal, the affidavit said, and crop movements have been hampered as well.

Shop statistics prepared by the Interstate Commerce Commission were then offered in evidence. These statistics showed that of 6,170 locomotives inspected by agents of the Commission in August 4,355 were defective and 465 were being operated in violation of safety regulations. Eighty-six accidents, through which four persons were killed and 94 injured, occurred in August because of bad-order equipment, according to the report. In July the Commission inspected 3,029 locomotives and found 2,383 of them defective, 165 to such an extent that their operation was in violation of law. Locomotive withdrawals in July were 3,608, the report showed and 7,506 locomotives were inactive throughout the month.

Supplementing these figures were more complete statistics from the American Railway Association. Bad-order freight cars increased in number through July and August as follows:

| | No. cars | Per cent of total |
|---|---|---|
| July 1 | 325,583 | 14.3 |
| July 15 | 342,079 | 15.1 |
| August 1 | 345,013 | 15.3 |
| August 15 | 335,575 | 14.8 |

Bad-order locomotives, the American Railway Association report showed, increased in number as follows:

| | No. locos. | Per cent of total |
|---|---|---|
| July 1 | 13,896 | 22.5 |
| July 15 | 15,247 | 24.7 |
| August 1 | 17,569 | 28.5 |
| August 15 | 18,698 | 30.3 |

After getting these figures before the court the government attorney began reading numerous affdavits from victims of strike violence.

Several days were consumed by Mr. Esterline in the reading of affidavits made by witnesses to various instances of

violence and sabotage. The indications at the time this is written are that the government will require at least a week and perhaps longer to present its case against the shop crafts leaders and that the legal controversy will continue for some time.

## Administration Officially Taking No Part in Strike Settlement

WASHINGTON, D. C.

REPORTS THAT negotiations with individual roads were in progress were confirmed at the White House on Friday, when it was stated that while the administration was doing nothing officially, the President was aware of what was going on and would be glad to see results ensue. It was stated that the matter was in the hands of a good many people, including railroad people and the shop crafts leaders and that it would not be proper for the President to discuss the subject until after settlements were reached.

Attorney General Daugherty also issued the following statement:

The government is not a party to any negotiations between the railroads and the employees, if any are in progress. The suggestion that such negotiations would be interfered with by the temporary restraining order granted by Judge Wilkerson is in my judgment wholly unjustified.

The only concern of the government is industrial peace and the restoration of transportation. Any conference between the railroad executives and their former employees to adjust their grievances is in the interests of industrial peace and would not find any obstacle on the part of the government. The government would not contend that either party to the controversy was denied by the temporary restraining order, any right or opportunity to confer between themselves and to the possible terms of such settlement.

The government is not a partisan in this labor controversy. It champions neither the employers nor the employees; their differences are for them to adjust. The government is, however, vitally concerned in the restoration of industrial peace and any movement that seeks to adjust the unhappy differences between employers and employees will not only find no obstruction from the government but will have its sympathy.

### Union Tries to Enjoin Daugherty Injunction

An unsuccessful effort to enjoin the enforcement of the temporary restraining order obtained at Chicago on September 1 by the attorney general was made in Washington on September 7 by the International Brotherhood of Electrical Workers, one of the striking shop crafts, James P. Noonan, its president, and Charles P. Ford, its secretary, who filed in the Supreme Court of the District of Columbia a petition for the issuance of an order restraining the United States attorney and the marshal for the district from serving the injunction issued by Judge Wilkerson at Chicago or from enforcing its provisions in any way to interfere with the holding of union meetings or the conduct of the strike. The petition asserted that the injunction had no effect outside the jurisdiction of the Chicago court and that Judge Wilkerson had no authority to issue it. Following a brief proceeding on Saturday morning Justice Bailey issued an order temporarily restraining the marshal from interfering with meetings of the union, which he had not attempted to do, or from doing anything outside the scope of the Chicago injunction, pending a hearing on Friday of this week on a motion filed by the government to dismiss the bill of complaint, but denied the order requested without prejudice to a renewal of the application after the Chicago hearing on Monday.

Messrs. Noonan and Ford were served with notice of the Chicago injunction shortly after they had filed their petition, and the district attorney in his motion denied the jurisdiction of the District Supreme Court to interfere with the service of an order from a federal court of competent jurisdiction. He also prevented the hearing, sought by the attorney for the union on Saturday morning, by asking for time to present his motion to dismiss, arguing that a full remedy was available to the plaintiffs in Chicago on Monday.

James S. Easby-Smith, who represented the union, made a lengthy argument in support of the application, saying that threats to interfere with the orderly meetings of the strikers had been alleged against Marshal Snyder as well as other acts claimed to be in excess of the scope of the injunction order, even if it were valid. The government's attorney argued that the bill of complaint alleged no fact showing that the district court for the northern district of Illinois was without jurisdiction to enter the order and that the District of Columbia Court was without jurisdiction to modify or review an order duly entered by that court.

The petition for a restraining order recited instructions issued by the union to its members to prevent disorderly acts and asserted that neither the union nor its members have, to the knowledge of the plaintiffs, committed any unlawful acts incident to the strike and if any such acts were committed they were contrary to the instructions. It asserted that the Chicago injunction was issued "without warrant or authority of law or equity" and that under it the marshal for the District of Columbia had threatened to prevent the holding of peaceable and lawful meetings of men on strike.

### Impeachment Charges Referred to Committee

Representative Keller of Minnesota presented impeachment charges against Attorney General Daugherty in the House on September 11, demanding his removal from office for alleged infractions of the Constitution, apparently in connection with the injunction proceedings, by abridging freedom of speech, freedom of the press and the right of people peaceably to assemble, and by "using the funds of his office in the prosecution of individuals and organizations for certain lawful acts which, under the law, he was specifically forbidden to prosecute." A resolution which the Representative introduced was referred to the Judiciary Committee, which is expected not to take any immediate action.

A bill to abolish the Railroad Labor Board and create in its place a board of five members to be appointed by the President and also to penalize strikes and lockouts was introduced in the House on September 11 by Representative Hoch of Kansas. The bill would encourage voluntary settlement of disputes without resort to the board, but would give full power of determination to the board where disagreement threatens to disturb transportation.

On receipt of private advices from Chicago indicating the adoption of the so-called Willard-Jewell plan for individual settlements of the strike on certain roads, but before news has been received indicating the extent or the definiteness of the settlements, Secretary of Labor Davis gave out a statement on Wednesday afternoon, apparently based on the assumption that this meant the complete settlement of the strike. He said in part:

"American industry has overcome the last obstacle in the way of the greatest economic revival the nation has ever known. With the settlement of the strike of 400,000 railroad shop craftsmen assured, the whole industrial machinery of the country is ready for a forward movement unprecedented in our economic history. The disturbances in the bituminous and anthracite coal mining industries are in the past and the 600,000 miners are at work." The secretary did not state whether he meant that a partial settlement of the strike was sufficiently satisfactory or whether he meant that the strike was already over on a majority of the roads without any settlement.

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THIRTY STEAM LOCOMOTIVES, valued at $278,167, were exported from the United States in May, 1922. Of these 21, valued at $206,107, went to Brazil.

# The Public and the Coal Industry*

By Herbert Hoover
Secretary of Commerce

THE FAVORABLE progress of legislation for the creation of a National Coal Commission fully empowered to get to the bottom of the troubles in this industry is the first step in one of the most vital problems we have. I have been earnestly recommending such a commission for the last three years. There are two distinct lines of problems: the employer-employee relationship, and the economic reorganization of the industry.

The present relationship of employer and employee in the industry comprises a periodical national danger, because with national organization and national disagreement, it means national stoppage. Surely fair play can be obtained for employer and employee in our civilization without war on the public. We must discover the machinery by which fair play can be delivered to all sides. We must have continuity of production in this essential commodity under righteous conditions of employment if we are to maintain the welfare of the nation at all. Under freedom from the restraint of trade laws the workers' organizations have grown in strength, solidarity, and devotion; they have shown able leadership, whereas the organization of employers for the purpose of collective bargaining has been to a large degree destroyed by the action of these very laws. The recent agreement in the bituminous industry was determined by only 15 per cent of the employers.

The federal laws on conciliation have failed to obtain any results for peace. The organization of employers on a national basis is no remedy, for in such case, while collective bargaining might proceed more smoothly, the public could well take alarm that the costs of any bargain can be passed on to the consumer.

The public has rights as well as the employer and employee. It has a right to a continuous supply of its vital necessities and services upon terms fair to the employer and employee.

Aside from employee relationships, most of the economic demoralization lies in the bituminous, as distinguished from the anthracite, industry, and my discussion hereafter refers to bituminous alone. This industry, indeed, functions very badly. Some state glibly that it will work itself out if left alone. But it must be borne in mind that it has not been left alone in the past and the present situation is in large degree due to legislative interference. The control of combinations among operators without such restraint among employees, the rules of artificial car distribution, the state legislation of various sorts, and other acts have a great responsibility for the present condition. I am not here questioning the necessity of these measures, but their influence in the situation must not be overlooked and they must be either supplemented or amended by wise provisions, if we are to have coal peace.

There are 8,000 bituminous mines with an annual capacity of 850,000,000 tons, 300,000,000 capacity beyond our national needs. The over-capacity in the industry results not in the permanent closing of some mines but in the operation of all of them more or less intermittently. Thus the working personnel is held attached to each mine in daily hopes of employment. In the best year of their history the bituminous mines operated an average of only 249 days in the year, out of a possible 308, whereas in most years the average is about 210, as against about 295 days in England and over 300 days in Germany. Many bituminous mines are probably operating an average of less than 180 days in the year.

There are 2,500 too many bituminous mines and 200,000 too many people in the business. Investment in the industry is extremely speculative. Distribution costs are excessive. The operators vibrate between bankruptcy and high profits. And the public in ordinary times is paying far more for its coal than would be necessary from a stabilized industry. Labor is honeycombed with the worst of stimulants to unrest, insecurity of employment. At the same time, men who have the opportunity to work full time in regularly operating mines earn returns far above the average income of our most prosperous farmers and other workers.

The largest contributor to over-expansion of the industry is the almost regular biennial quarrel. Beyond this the non-union mines in the South, with a capacity of over 300,000,000 tons yearly, being able to secure a lower wage level than the union mines in the North, at times of sharp competition are enabled to under-sell northern coal, and are gradually causing the industry to migrate from the North to the South, with consequent over-equipment in the North.

Intermittent operation also arises in the chronic annual shortage of railway cars. A bad system of distribution of cars to mines by the railways contributes also. The fly-by-night operator has a right to demand his quota of cars in times of good demand and paralyzes the ability of the systematic mines to maintain regular operation. There is inadequate storage at points of consumption to take up slack from intermittent production. The marketing machinery itself creates intermittency because of the incessant shifting of contracts from one mine to another. Furthermore the high unit wage basis encourages absenteeism and thus at times an irregular supply of labor; there is a perpetual rain of small and local strikes, all directly and indirectly contributing to intermittent operation—for all of which the public pays.

Aside from relief from strikes and lockouts, there are proposals of practical remedies which should be investigated. For instance, an extra annual storage of 20 per cent of railway consumption would equalize the seasonal fluctuation. A system of car distribution that would not itself break into regular operation would help. Larger storage by public utilities would give greater security to the public.

A contributing remedy that will need the most earnest consideration is the possibility of permitting the cooperative system of marketing developed by the farmers to be applied by such mines as wish to adopt it. More accurate statistics of capacity, production, consumption stocks, and prices would greatly promote stability and would be in the true interest of the operators who are now blamed for much that is not their fault.

It has also been proposed, although I have doubt as to practicability, that there should be a penalty in higher wages for short-time employment. Proposals are also made for a basic wage with a participation in the realized price of coal.

Of dominant importance, however, is the fact that the whole employee and employer relationship requires reform. The instability of these employment relations themselves form a vicious circle of quarrels. The constant local violation of agreements, and the multitude of small strikes are themselves proofs that the industry needs better organization, and public participation with guarantees.

I recognize that, or anything that lends stability to the industry is opposed by a small minority of speculative operators who use the periodically disturbed production to reap a recurrent harvest. It would be opposed on the other side by some of the more narrow-minded labor leaders who seek to reduce the number of hours of actual labor to some minor fraction of the whole year. However, I believe that the constructive men on both sides are in full agreement that we must have a broader and better solution than results from the truces of the past few years. These periodic wars are symptoms of a disease. But before we treat this disease we must have a more accurate diagnosis.

*From an address before the Salesmen's Association of the American Chemical Industry, New York City, on September 12.

# Dynamometer Tests of the Locomotive Booster

## Severe Trials Demonstrate Reliability at Heavy Loads and High Speeds; Maximum Drawbar Pull 11,000 lb.

SINCE THE ADVENT of the locomotive booster, which was first applied early in 1919, numerous tests have been made in road service but up to this time little information has been available regarding the mechanical efficiency of the device or the power which it develops. While the results of actual operation can be studied best on the locomotive, it is necessary to test the booster independently if its performance as a machine is to be determined. With this in mind, the Franklin Railway Supply Company, New York, recently conducted a thorough dynamometer test of the latest type of booster. The purpose of the test, which was made under the direction of Dr. Harvey N. Davis, of

**Fig. 1—The Test Plant, Showing Boiler (at left), Booster and Condenser**

the Engineering School of Harvard University, was to determine accurately the ability of the booster to stand up satisfactorily under continuous heavy loading and operation at high speed, the power which the booster will deliver under varying conditions of speed and boiler pressure on a locomotive, the steam consumption per brake horsepower hour or drawbar pull under such conditions and the mechanical efficiency.

### Description of the Booster Engine

The Type C-1 booster which was tested is a 10 in. by 12 in. double-acting two-cylinder engine with cranks set at 90 deg. Some of the important mechanical features of the design are as follows: The gear ratio between the booster engine shaft and the trailer axle is 14 to 36. The engine frame is designed to withstand the stresses imposed upon it with the minimum strain and the gear cover has been made an integral part of the casting. The bearings in the trailer axle boxes have been made larger and an oil tight case has been provided for the trailing axle gears, affording splash lubrication of these parts. The rocker design has been changed to relieve the bottom journals of all stress and stops have been so placed that the pitch circles of the gears are held in the proper relative position at all times. The engine case has been fitted with an oil tight cover which is easily removed and replaced. A new design of manifold for the live and exhaust steam has been applied at the rear of the cylinder with large cross section in the passages to reduce the steam velocity. A manifold has also been attached to the crank case to receive all air connections. The appearance of the booster is well illustrated in Fig. 1 which shows the machine connected to the dynamometer shaft with the cover of the crank case removed and the rear end elevated.

### The Test Plant

The test equipment was designed especially for this test and for the routine test under load to which all boosters are subjected after assembling at the factory of the Poole Engineering & Machine Company, Baltimore, Md. The steam plant consists of a 250 hp. Heine boiler with a low temperature superheater and a feed water heater connected in parallel with and draining into the main condenser. The test bed carries a shaft and 18 in. gear, similar to a standard trailer axle gear, direct connected at one end to a prony brake. The steam pipe from the boiler to the test bed is fitted with a gage to show the inlet pressure and a thermometer to indicate the superheat, which ranged between 30 and 35 deg. F. in most of the tests. A second pressure gage is located about 30 ft. back from the inlet gage, the piping between duplicating that on a locomotive. Pressures read on this gage are called throttle pressures in the report and correspond to the boiler pressure on a locomotive.

The booster was operating on the test plant during four

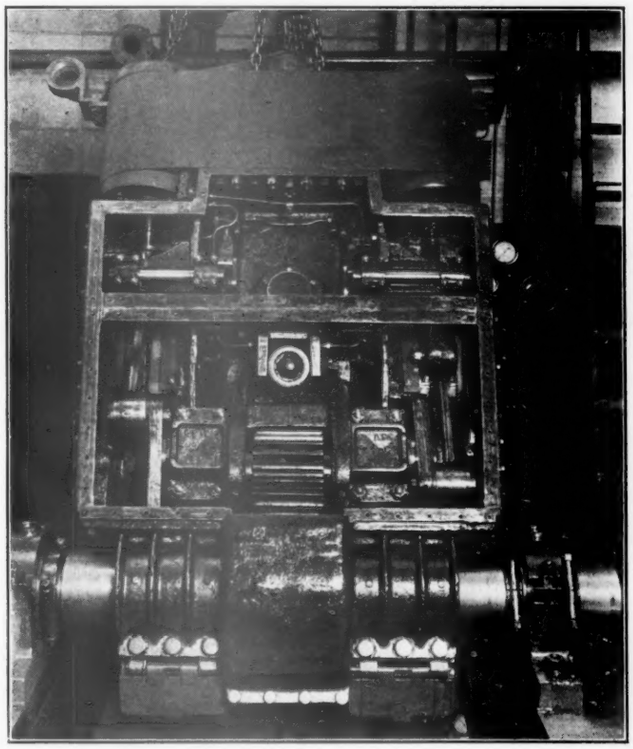


**Fig. 2—Top View of the Booster, with Cover Removed**

days under a wide variety of conditions ranging from stalling tests to high speed runs at 22 m.p.h. Some of the trials were made with the exhaust piped to the condenser to measure the steam consumption and others with the steam discharging to the atmosphere through 40 ft. of 4 in. pipe to duplicate roughly conditions on the locomotive. The tests represented an equivalent run of about 92 miles as of a 45 in. trailer wheel, most of which was made under heavy load.

During each of the tests the speed and boiler pressure were held as nearly constant as possible. Indicator cards were taken and records made of the speed, the brake load, steam pressure and temperature and steam consumption.

From the data thus obtained the details of the performance of the booster were determined as set forth in the following paragraphs.

### Mechanical Efficiency

The mechanical efficiency of the booster, or the ratio of the power delivered at the rim of the trailer wheel to the power developed in the cylinders, is plotted in one of the curves on Fig. 3. It will be noted that it varies from 90 per cent at 6 m.p.h. to a maximum of 95 per cent at 14.5 m.p.h. dropping slightly at higher speeds. The mechanical efficiency of the booster does not change with the steam pressure over the limited range met with in practice.

These mechanical efficiencies seem very high but the explanation of the excellent results is to be found in the high efficiency of the gear arrangement, the effective lubrication and the unusually high mean effective pressure. A typical curve of the brake horsepower, which corresponds with the

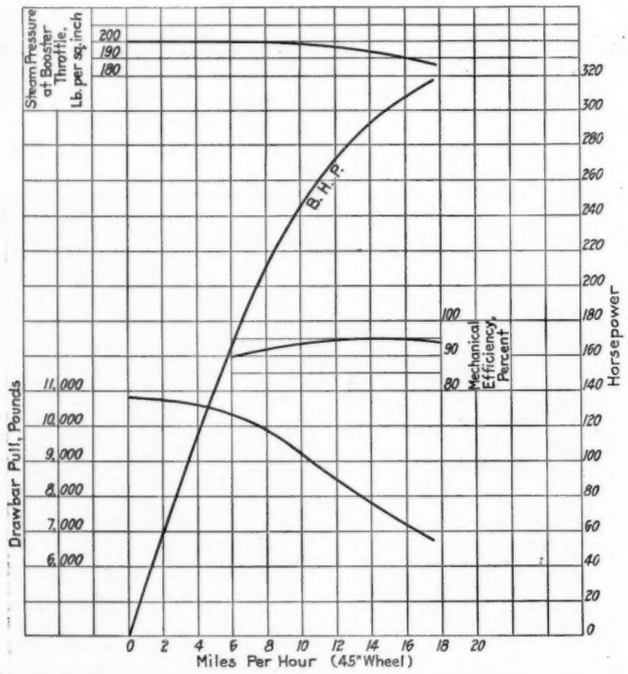



**Fig. 3—Drawbar Pull, Horsepower and Efficiency of Locomotive Booster**

power delivered at the trailer wheels, is also plotted in Fig. 3. The steam pressure dropped somewhat during this test and with a pressure of 186 lb. at the booster throttle at 17.8 m.p.h., 316 hp. was developed.

Tests showed that at any given speed with a given exhaust connection the brake horsepower is proportional to the gage pressure at the booster throttle but does not vary with superheat.

### Drawbar Pull

A typical curve of the drawbar pull as obtained during the tests is shown in Fig. 3. For convenience in predicting the drawbar pull curve of the booster on any particular locomotive the chart of Fig. 4 has been plotted for speeds from 0 to 25 m.p.h. and boiler pressures from 140 lb. to 200 lb. gage.

In using this chart the pressure that can be maintained at various speeds by the boiler supplying the booster is estimated and the corresponding points are plotted on the chart, using the pressure lines as guides. A constant pressure equal to the boiler pressure of the locomotive can be realized over the entire speed range if the cut-off in the main locomotive cylinders is shortened enough at each speed to keep the steam consumption of the main cylinders and the booster cylinders within the limit of the capacity of the locomotive boiler. It will be noted that with 200 lb. pressure the type C-1 booster delivers a pull of 11,000 lb. at starting and at 20 miles an hour is still giving nearly 7,000 lb. at the drawbar.

### Steam Consumption and Water Rate

To show the steam consumption of the booster under conditions identical with those plotted in Fig. 4, Fig. 5 has been

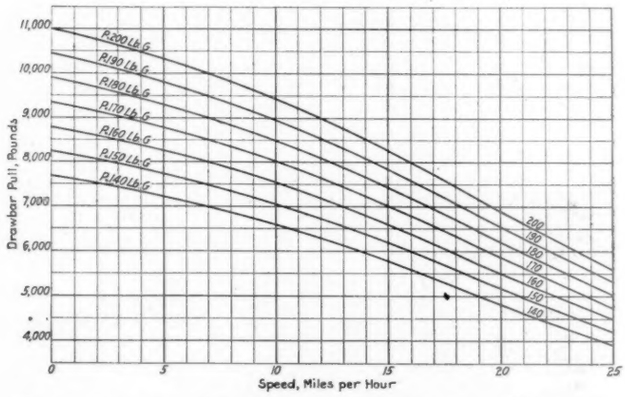



**Fig. 4—Drawbar Pull Curves at Various Steam Pressures**

drawn. The values given by this chart are based on superheat of 30 deg. F., the average value during the tests. The steam consumption is assumed to decrease about one per cent for each 6 deg. F. increase in throttle superheat. If saturated steam were used the consumption would be approximately five per cent greater than shown and if highly superheated steam were used, the values would be materially less.

The water rates as determined from the tests varied from 40.8 lb. to 43.4 lb. per brake horsepower hour. These rates

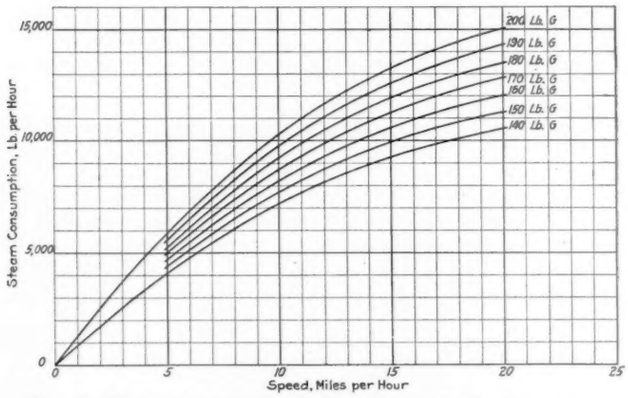



**Fig. 5—Steam Consumption at Various Boiler Pressures**

are, of course, subject to the same variation due to superheat as the steam consumption shown in Fig. 5.

### Application to Operating Conditions

The manner in which the data obtained in the test can be used to determine the performance of the booster in actual service is illustrated in Fig. 6. This shows the increased hauling power and increased acceleration that can be obtained when the booster is applied to a Pacific type freight locomotive. In the chart the drawbar pull exerted by the locomotive or required to pull the train is plotted ver-

tically and the speed in miles per hour is plotted horizontally. The drawbar pull required for a 2,500 ton freight train, averaging 40 tons per car, on level and on grades up to 0.8 per cent is shown in the series of dotted lines. The lower solid line shows the drawbar pull of the locomotive without the booster and the upper line the drawbar pull with the

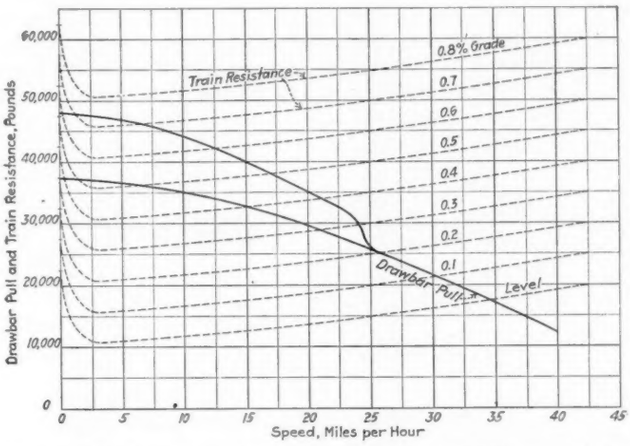



**Fig. 6—Performance of Pacific Type Locomotive Hauling 2,500 Tons With and Without Booster**

booster in operation, on the assumption that the booster is cut out at about 23 m.p.h.

Assuming the train is starting on level track it is evident that the locomotive without the booster can exert drawbar pull considerably greater than the train resistance. The difference between the drawbar pull of the locomotive and

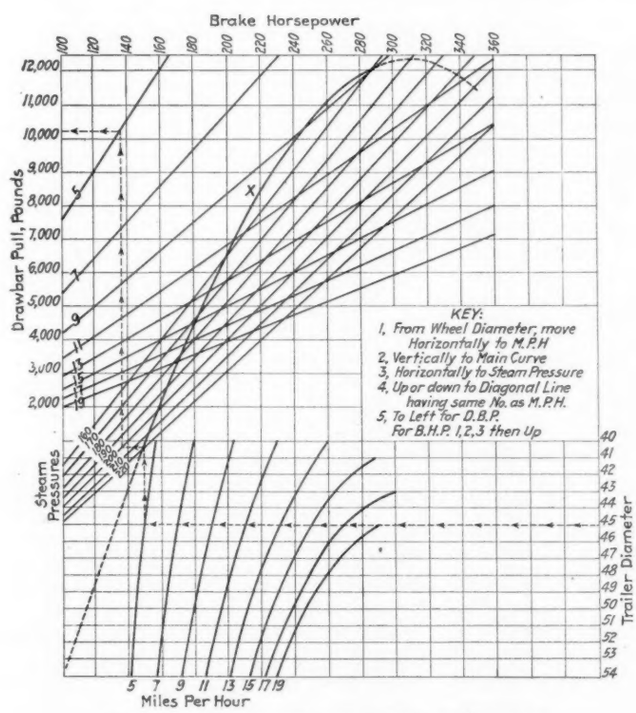

Brake Horsepower
Drawbar Pull, Pounds
Steam Pressures
Trailer Diameter
Miles Per Hour
KEY:
1, From Wheel Diameter, move Horizontally to M.P.H
2, Vertically to Main Curve
3, Horizontally to Steam Pressure
4, Up or down to Diagonal Line having same No. as M.P.H.
5, To Left for D.B.P.
For B.H.P. 1,2,3 then Up

**Fig. 7—Chart for Drawbar Pull of Booster**

the resistance of the train is available for acceleration. With the booster still more power can be obtained for acceleration and the speed of the train will be increased more rapidly. As the speed increases the train resistance increases and the drawbar pull drops off until finally the drawbar pull just equals the train resistance. Under this condition no more acceleration will take place and the train will run at a constant speed of about 34 miles per hour on level track, as shown by the intersection of the drawbar pull and train resistance curves.

The pull required to start this tonnage on various grades is also plotted on this chart which shows the locomotive can only just start a train of this weight on a 0.3 per cent grade. With the booster the locomotive is able to start it on a 0.5 per cent grade and attain a speed of 17 m.p.h. If the booster is thrown out the speed of the train on this grade will drop back to 6 m.p.h. and if it stops the locomotive would be unable to start again without the aid of the booster.

The great advantage of the booster as shown by this chart is to enable the locomotive to make a grade of 0.7 per cent, while without the booster a train of this weight would stall the locomotive on a grade slightly more than 0.5 per cent. Even with a grade of 0.5 per cent, however, the booster offers the advantage of enabling the train to make a speed of 17

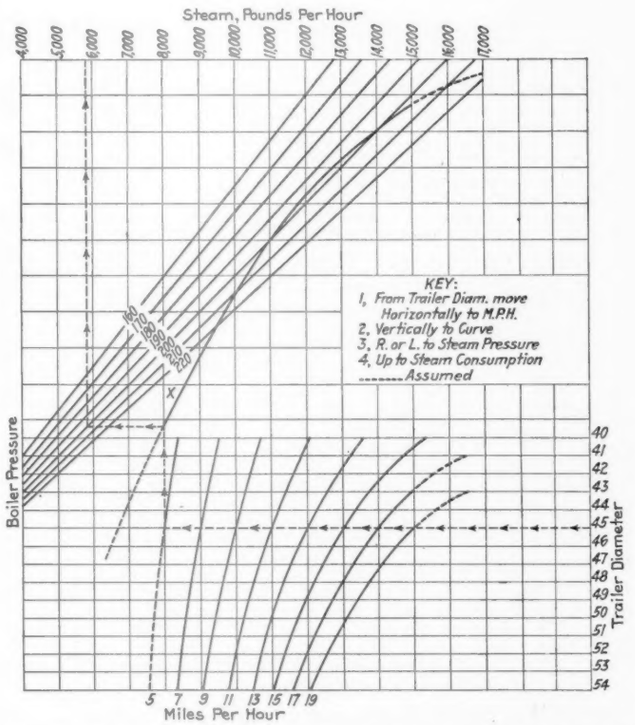



**Fig. 8—Chart for Determining Steam Consumption of Booster**

m.p.h. instead of only 6 m.p.h., thus saving over 64 per cent of the running time on the grade. With a grade of any appreciable length this saving in running time would be an important item, particularly near congested stations.

In order to enable engineers to predict the results that will be obtained under any given conditions, the curves shown on Fig. 7 have been developed. From these curves the tractive effort for any size wheel and any steam pressures can be determined, as it will be readily understood that these are the only two variables in the formula.

As an example of the use of the chart, assume that the tractive effort for a 45-in. wheel at 200 lb. boiler pressure is desired at speeds at from 5 to 13 miles an hour. The trailer wheel diameter is located at the right of the curves and the 45-in. point is used as the origin. The horizontal line is followed to the left until it crosses the speed curve that is desired, in this case five miles an hour. From the intersection of the horizontal line with this curve a vertical line is followed to the main brake horsepower curve, marked *X*. From this point a horizontal line is followed again

either to the left or right until it crosses the steam pressure curve desired, in this case 200 lb. Then a vertical line is followed, up or down, as the case may be, to the diagonal line in the upper set for the same speed, in this instance to the line marked 5, and moving horizontally from this point to the left, the drawbar pull at the given speed and boiler pressure can be read from the scale at the side. Similarly any desired figure can be obtained and the drawbar pull curve set up for any conditions.

Another factor of interest to engineers is the steam consumption for the booster. To enable this to be readily determined at various speeds, the chart shown in Fig. 8 has been developed. Having determined the wheel diameter and knowing the boiler pressure, the chart is used as follows:

From the point on the lower right hand margin corresponding to the trailer wheel diameter, a horizontal line is followed to the miles-per-hour curve, and thence moving vertically to the curve marked *X*. From this curve a horizontal line is followed to the steam pressure curves, and then moving vertically to the top of the chart the steam consumption in pounds per hour can be read from the scale. It will be seen from the examples given that a complete prediction of the performance of the booster can be made from these curves.

# Terminal Relief by Direct Freight Delivery

## Successful System Necessitates Complete Cooperation of Railroad, Shipper and Responsible Trucking Medium

THE SUBJECT of direct freight delivery or "store door" delivery was presented at the Society of Terminal Engineers, New York, on September 12, in the form of a series of independent talks on the various phases of the question. In one of these talks, the various methods of interchange and off-track freight handling now in use at St. Louis, Cincinnati and, by the Erie, at New York were discussed and analyzed. Considerable evidence was offered that the motor truck and demountable body forms an important and economic medium for the movement of freight in congested terminal districts. This subject was presented by W. W. Drinker, terminal engineer, Port of New York Authority, and is given here in abstract, followed by an abstract of the remarks of others taking part in the discussion.

### The Port Authorities' Plan

The Port of New York Authority, after a year of study and conference with transportation, business and municipal interests as to the comprehensive plan of the Bi-State Commission, adopted the automatic electric system of that commission for the relief of Manhattan. Realizing, however, that a considerable period of time must elapse before that system could be installed and that in the meantime the situation would grow worse, they recommended the establishment of a motor truck service between the railroads of the port district and the island of Manhattan as a present relief.

This service is to utilize the principle of the container in order to avoid rehandlings of freight, leaving the motor truck free to perform the functions for which it was designed, *i. e.*, the rapid carrying of freight. It is to handle the carload and less than carload freight which is now handled at pier stations, and will utilize to the fullest extent possible the existing ferries to New Jersey and water routes for the railroads having long overland hauls in case the water routes prove, upon analysis, cheaper.

But where does the Port Authority come in? Why cannot each railroad establish such a service for itself? And rumors are abroad that several of them are contemplating such service very seriously. The answers are that a responsible medium between the railroads and the shippers is needed; that with a series of separate stations for each railroad the economies of full loads and short hauls are denied to the shipper; that street congestion will not be relieved and that there will be duplication of effort and destructive competition as to station facilities and service, which will deny full economies to the railroads. The Port Authority is an impartial public body which can assist and participate in the creation and operation of an impartial organization, without which the full economies of the motor container system can never be realized.

### St. Louis System Reduces Congestion

There is nothing novel about the plan. It is, in itself, an evolution arising from conditions at St. Louis where the majority of the railroads are on one side of the Mississippi river and the bulk of the business on the other. Twenty railroads in the St. Louis-East St. Louis district handle less than carload freight. All the west side lines and four east side lines have freight stations only in St. Louis. Four east side lines have stations in both cities and nine east side lines have no freight stations in St. Louis; these nine together with the four east side lines having stations in both cities, handle their less carload freight in the off-track stations of the transfer companies which arose out of this situation shortly after 1916.

There are about 20 transfer companies whose charges between the east side freight houses and the west approach to Eads bridge are absorbed by the railroads but only three operate off-track freight stations and are recognized by the railroads in the application of rates. These transfer companies have become so popular that the Terminal Railroad Association, which formerly handled this business by rail to their Tenth St. station in St. Louis, no longer finds that station over-burdened but operates it at less than capacity. The Engineers Committee, St. Louis-East St. Louis railroad terminals, seem to regard this service as cheaper than switching for less carload freight in St. Louis.

The business of the three transfer companies is virtually a voluntary store-door delivery plus less than carload interchange between railroad stations. For freight handled at their off-track stations the railroads make them a certain allowance and the shipper must call for or deliver his wares. For freight which the shipper desires to receive or forward at his door, the railroads make the transfer companies a lesser allowance to a constructive delivery point on the west side of the river and the shipper pays to the transfer company an additional charge from the constructive point to the store-door although the same dray carries it between store and car door. In addition to the freight handling floor, the off-track stations have overhead warehousing facilities owned or controlled by the transfer companies. In the off-track stations freight is received from shippers and consolidated into dray loads for the individual railroads and inbound freight brought from the railroads by drays is delivered to trucks or wagons of consignees. These practices have all been confirmed by the Interstate Commerce Commission.

Additional off-track stations have been recommended by the Engineers Committee of the St. Louis-East St. Louis railroad terminals in their 1922 report, as a solution of part of the district's troubles.

### Cincinnati Motor Terminals Method

Prior to 1917, eight railroads entering Cincinnati were suffering all the evils of trapcar interchange of less carload freight. This interchange business grew to a point where the station capacities were inadequate and relief was had from horse-drawn drays, 115 heavy drays and 225 trap cars being in daily service. To correct this evil it was necessary to establish an intensive trucking system. Research was had in several cities, among them St. Louis, where at the time of the study (1915) horse-drawn drays were still in service. From the dead wagon system, then in use, there developed the Motor Terminal Companies system of motor truck and demountable bodies with crane hoists for the transfer of the bodies to the chassis. This is essentially an interchange service whereas the St. Louis systems have an off-track station service in addition to less carload interchange.

The trapcars and horse-drawn drays, 225 and 115 respectively in number, have been replaced by 15 motor truck chasses, 225 demountable unit containers, 60 electric hoists and 13 hand hoists. It is said that the number of hoists could be materially diminished and the same service performed. Material savings resulted and the time of service was improved.

### Motor Hauls in Miles Compared

The Erie in January, 1922, established a direct delivery and inland station business for handling part of its Manhattan business. Horse-drawn drays were used at first but they are gradually being replaced by tractors with "stake wagon" trailers. The system apparently has been modeled after the St. Louis system but it is expanding and proving successful from a traffic angle, and the Erie deserves credit for its initiative. Some of its lighterage freight is also handled in this way. The United States Trucking Corporation is the medium between shipper and railroad.

The St. Louis transfer companies handle 4,138 tons per day and the average haul is 1.5 miles. The Motor Terminals Company in Cincinnati handles 700 tons per day and the average haul is 3 miles. The U. S. Trucking Corporation's Erie off-track service handled at inland stations in May, 1922, approximately 450 tons per day with an average haul of 1.6 miles, one mile of which is ferried. The Port Authority's system is expected to handle ultimately 10,000 tons per day with an average haul of 3.8 miles, but it will have to start small and expand as did the others.

### What System Will Minimize Costs?

From this point on the statements made are not meant to be conclusive but represent preliminary analysis on methods yet to be adopted or rejected by the Port Authority. They are in fact even in advance of proper checking by the staff.

For instance, the Baltimore & Ohio, the New York, New Haven & Hartford and possibly the New York Central have long hauls to Manhattan. What is the system of motor truck transportation which will minimize their costs? What is the relative cost of a motor truck and demountable body per mile overland and what, if chassis and container body are hauled by ferryboat or self-propelled float?

Taking the Motor Terminals Company's rental basis as representative of motor costs; the chassis and body cost $22 per 8-hr. day, or $0.0458 per minute; assume the speed to be as ascertained in Bi-State Commission's studies 6¾ miles per hour, this amounts to $0.4071 per mile which with the running rental of 50 cents per mile gives a total cost overland under power of $0.9071.

In comparison take the cost of a certain railroad ferryboat as recorded for 1911, $3.0912 per mile; expand it 60 per cent for increases in cost of labor and material and you have a total cost of $4.8279 per mile and adding $0.9481 for interest on first cost and depreciation of boat gives a total of $5.7760 per mile.

At the derived boat speed 9.4157 miles per hour the chassis and body rental standing idle on boat amount to $0.2918 per mile for one truck and container, or with 24 trucks, the ferryboat capacity, the idle rental cost is $7.0032 per mile, which plus $5.7760 per mile for boat expenses gives $12.7792 total; dividing this by 24 gives $0.5324 per mile for truck and container on ferryboat as compared with $0.9058 on land or 37.47 cents per mile saved in running time.

Using a derived time of 7 minutes per trip for despatching and receiving ferryboats and any delay you may assume for truck at ferry gates, one way, will give you the economic haul limits of trucks and containers on ferryboats.

### Costs of Equipment Analyzed

There is another moot question pending, motor trucks and containers (either demountable or loose) or tractors and trailers. There is bitter fighting as to which is better. The Cincinnati system uses one, the Columbia Terminals Company in St. Louis the other. Let us take the Cincinnati equipment first cost for 16 five-ton motor trucks, 225 container bodies, 13 hand hoists and 60 electric cranes and an estimated first cost of a similar equipment of tractors (16) and trailers (225). The figures show an excess of 30 per cent for tractors and trailers in favor of motor trucks and demountable bodies. As to operating costs; assuming depreciation at 20 per cent on investment, interest on first cost at 8 per cent, operating expenses including gas, oil, tires, drivers, executives, chassis repairs and chassis tire renewals is nearly the same in each case; insurance on chassis the same; insurance on demountable bodies and hoists in the Cincinnati case at actual cost; insurance on semi-trailers at 5 per cent on investment; body maintenance in Cincinnati case the same as semi-trailer bodies; repairs on trailers running gear 5 cents per mile and yearly renewal of trailer tires gives a result showing tractor and trailer operation 100 per cent greater,—for the costs not common in both cases,—than motor truck and demountable body.

Other assumptions and other conditions may change these figures but as to that, the contract rates charged for service in Cincinnati, compared with St. Louis tariff rates, are of interest. The difference may be caused in part by traffic influence. The service rate between the railroads and Columbia Terminals depots varies from 4 to 12 cents per cwt. dependent on performance; whether all in St. Louis, all in East St. Louis or between St. Louis and East St. Louis. The Cincinnati contract rate for interchange is 5 cents per cwt. or $1.00 per ton.

All the rates at St. Louis whether for interchange or off-track stations are peppered with exceptions and the actual total tonnage of one railroad handled to off-track stations averaged $2.73 per ton or 13.65 cents per cwt. actually paid to the transfer company, and interchange averaged $1.80 per ton according to the St. Louis committee report. Of course the services are not comparable in off-track station work, as the Cincinnati system only handles interchange, but the railroad interchange rates are comparable, and there is room in a $2.73 rate per ton at off-track stations for considerable handling.

The question of tailboard space while not militating so strongly in St. Louis against the trailer as it would in Cincinnati, is very serious in any application to inland terminals in Manhattan, especially if existing warehouses are used temporarily. For instance, take a typical warehouse capable of handling as far as floor space is concerned, 600 tons per

day with demountable bodies (360 tons in and 240 tons out). Assuming 12½ minutes per ton for unloading or loading and 4.5 tons per trailer or container, with 21 doorways, 10 for inbound and 11 for outbound, trailers would occupy the inbound doorways 75 hours, merchants' wagons 75 hours, a total of 150 hours or 15 hours per doorway would be required. Trailers would occupy outbound doorways 50 hours, merchants' wagons 50 hours, a total of 100 hours of 9.1 hours per doorway. How would the warehouseman receive or forward his own goods? With demountable body containers not blocking a doorway for more than 1½ minutes, the inbound doors would only be occupied 7.7 hours each and the outbound doors 4⅔ hours each.

### Erie's Proposed Container Plan Discussed

One suggested system has been roughly analyzed with much interest as applied to Manhattan freight. This consists of motor trucks and containers between terminals in Manhattan and a river front pier; transfer of containers only to carloads holding 60 containers single tier or 120 containers double tier, by means of a straight-line, traveling gantry crane; carfloat and containers self-propelled to a New Jersey pier; transfer by crane of containers to flat cars; flat cars and containers to transfer platform and freight from containers on platforms to standad cars for line haul or further consolidation.

This may be efficiency, but analyze it.

Take the crane transfer in Manhattan. If motor trucks unloaded containers to one float and went to another to receive containers approximately three hours would be required for the transfer. With three hours for transfer from float to flat cars in New Jersey, half an hour for floatage across the river, 10 minutes for truck travel and depot transfer of containers to chassis in Manhattan, 10 minutes for flat cars between New Jersey pier and transfer platforms and 10 minutes platform to standard cars, your average time per container on 60 containers forwarded west bound would be 5 hr. 30 min. between Manhattan terminal door and car floor.

But here are three speed rates and a perfect cycle does not seem possible unless you unload and reload one float simultaneously. Of course, if you get enough car floats you can work the other way, but try it and see at what cost for equipment and service. If this seems unreasonable, try a time study on unloading and loading a float simultaneously. Here the Manhattan gantry crane transfer would take approximately 5 hr. and (following through) the time for one container between terminal door in Manhattan and car floor in New Jersey would be (on a 60-container float) 8 hr. 30 min. Three to four hours is present practice and motor truck and container body service between Manhattan door and sealing of car door in New Jersey via ferry would take 35 min.

### Other Discussion on the Subject

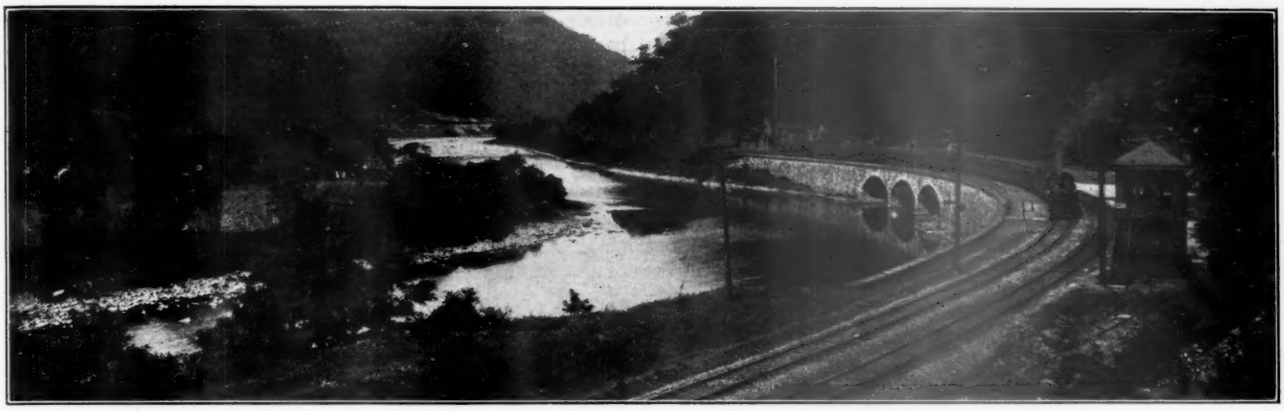
H. C. Snyder, general freight and passenger agent, New York terminal district, Erie Railroad, described the methods which that road has been using in the delivery of freight to consignees via motor trucks and ferries, stating that it was not strictly store door delivery as the term is customarily used but rather a method of direct delivery. This system was described on page 233 of the January 21, 1922, issue and page 826 of the April 1, 1922, issue of the *Railway Age*. He added that the present terminal allowances are far below the actual costs in the New York terminal districts and this has caused the eastern roads to carry a heavy burden. The result is that tonnage is being diverted gradually to other ports, such as Boston and Baltimore, where the terminal expense is considerably less. The method which has been adopted by the Erie is a step forward in a plan to handle the freight in a more economical manner, to relieve congestion and allow an expansion in the volume of business which may be handled. To date it had proved satisfactory and successful in operation.

W. S. Sims, special accountant, Pennsylvania Railroad, said that store door delivery as such, was a problem purely of the consignee or shipper, *i. e.*, they can have it any time that they want it by arranging with a responsible trucking company to make or take delivery with proper authority to sign receipts, etc. Direct delivery was an entirely different proposition, since it involves the cooperation of the railroad and the consignee. The latter must be willing to accept freight at any time that it is delivered to him. This brings up a difficult point since the average shipper or consignee is jealous of all the privileges accorded by the railroad under the present laws and regulations. To a large extent, the majority insist upon the full 48 hour free storage which actually amounts to nearly three days under the present system. Thus before direct delivery could be successfully effected the consignee must be compelled by law to accept delivery when made.

He stated that the net return on the railroad dollar had shrunk so low that if any additional terminal service was to be added to that now given, it would have to be paid for by the consignee. In other words, the railroads must be compensated for the expense of new facilities, which would amount to a considerable figure in and around New York. If there is any saving to be made, such savings cannot in justice be passed on entirely to the shipper or consignee; they must be cut or divided in some manner equitable to both parties. The propositions of store door or direct delivery will stand or fall on their economic positions. A factor to be considered is that the railroads are gradually being forced off the waterfront by the increasing rentals for piers. The problem was complicated by the necessity of evolving and simplifying methods of collecting charges, making out bills of lading, receipts and other papers in connection with the large number of freight classifications and rates which are now in common use. He added that the Pennsylvania was studying the question in detail, one of the plans under scrutiny being that of a secondary express service, *i. e.*, express service at terminal points with freight service on the line.

L. R. Gwyn, executive assistant to the president, American Express Company, expressed some surprise that store door delivery had not been adopted already in many places in this country if it was such a "cure-all" as many claimed. He recognized that the New York condition was an accentuated one which would, of its own necessity, better itself as time went along. He referred to the experience of the American Express Company which, in a way, was a modified and simplified form of store door delivery. Long years of use and training had accustomed consignees in this service to accept shipments promptly and pay the charges on delivery. Much difficulty and trouble was obviated by the fact that the drivers were trained to make out all papers and were responsible agents to the company. Even though there were fewer classifications in this service, he saw no reason why drivers could not be trained to handle the more complicated classification of railroad freight—an item which must be given serious consideration in store door or direct delivery systems. He brought up the question of what can be done with the shipper who does not want this service.

Col. C. Hine, Tabulating Machine Company, gave a short talk on the inconsistency of expecting the railways to carry the burden in this question of direct delivery by furnishing an extra service requiring additional investments and then passing the benefits on to the shipper. He called attention to the fact that the return of the railroads per man in service was less than one-half of that of the merchants in New York and while the railroads "turned over" their capital in a period of from three to four years, merchants in general "turned over" their capital in about one year, and in many cases several times in a year.



*Indian Creek, Pa., (Allegheny Mountains) on the Baltimore & Ohio*

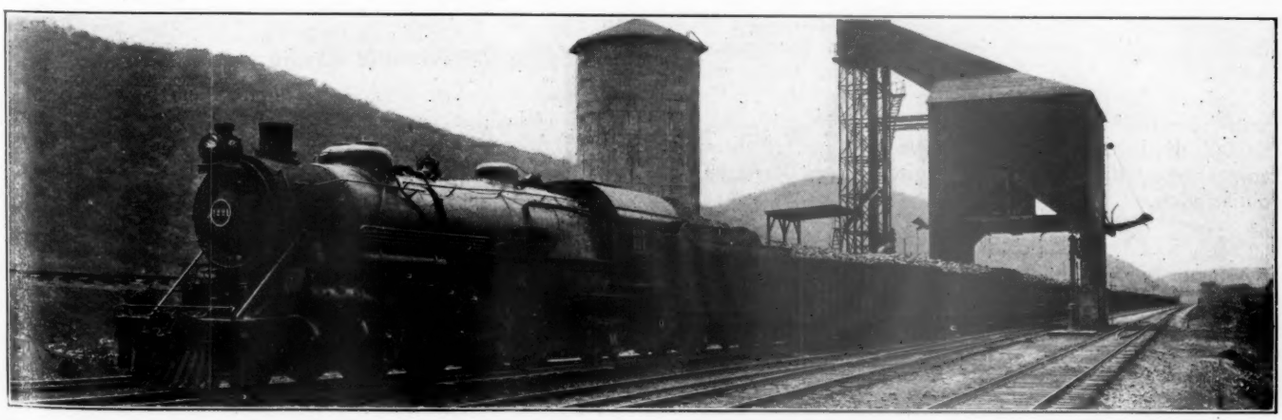
# Will Baltimore & Ohio Pay a Common Dividend?

## Company Has Strengthened Its Position Through the Conservation of Income. Surplus Now Totals $39,116,290

THE BALTIMORE & OHIO succeeded in 1921 in effecting a marked improvement in its earning power as compared with 1920 or with the period of federal control. This improvement is evidenced in a net railway operating income or, as the recently issued annual report expresses it, "net income from property used in transportation service," of $21,853,546. This compared with a deficit after rentals in 1920 of $4,427,019; with a net earned for the government in 1918 of only about $7,000,000 and in 1919 of only about $5,000,000. The actual increase over 1920 was $26,280,565. This improvement, as great as it was, did not succeed in restoring the Baltimore & Ohio to a pre-war earnings basis. It could hardly have been expected to have done so under the conditions of industrial depression which governed during 1921. The 1921 net fell about $6,000,000 short of equalling the standard return for operations during federal control—and the standard return figure of $28,031,146 furnishes about as good a measure of pre-war earnings as any. It is likely, however, that a pre-war basis of earnings will be reached during 1922. The Baltimore & Ohio, even with a large part of its coal tonnage lacking, has been reporting some very favorable monthly earnings.

The increase in net railway operating income for 1921 over 1920—as noted, $26,280,565—was secured in spite of a decrease in revenue tons of 29.81 per cent; and in revenue ton-miles of 32.17 per cent. The decrease in freight revenues was 14.39 per cent and in total revenues, 14.37 per cent. Actually the 1921 operating revenues were $198,622,373, a decrease from 1920 amounting to $33,322,071. The cut in operating expenses, however, was $59,942,283. The 1921 operating expenses, totaling $166,457,024, were 26.48 per cent less than those for 1920. To secure this result expenses were cut very severely—possibly too severely. The cut in expenses for maintenance of way was 25.53 per cent; in maintenance of equipment, 34.47 per cent, and in transportation, 24.89 per cent. By means of these cuts the 1921 operating ratio was brought down to 83.81 per cent as compared with 97.61 per cent in 1920. Transportation expenses in 1921 were 43.04 per cent of total operating revenues.

The reduction in expenses for maintenance of way and equipment was sufficiently severe as to indicate deferred maintenance. That this was the case is admitted by the Baltimore & Ohio management and it was so admitted by the management a year ago. It was explained that the cut was rather in the refinements than in anything else and that



**Baltimore & Ohio Coal Train**

*Sixty-three steel hopper cars (55 tons capacity) loaded with 3,351 tons of coal. Gross weight of cars and contents 4,586 tons. Mikado engine, weight 284,500 lb.—Tractive effort 55,000 lb.*

nothing was omitted which might in any way prove detrimental to safety or efficient operation. The Baltimore & Ohio was, however, no exception in 1921 in the matter of cutting maintenance expenses; it was merely a bit more willing than some of the other roads to admit that this was its policy.

The Baltimore & Ohio suffered rather severely from federal control, for reasons which have already been given in these columns. Its sharp recovery in 1921, however, showed that the conditions were but temporary and that they could be remedied without undue difficulty under more normal B. & O. conditions. That this is appreciated by the management is indicated in the following paragraph in the annual report:

"The reduction in cost of operation and the improved standard of service accomplished during the year covered by this report were both due in large measure to the loyal and efficient efforts of the officers and employees. The board wishes to record its appreciation of their efforts. Their continued helpful co-operation in improving the service and efficiency of the company is earnestly desired."

### 1921 Improvement Not Reflected in Corporate Net

Because of the complications embodied in reporting standard return and guaranty the improvement which the Baltimore & Ohio made in 1921 is not reflected in its corporate income account. The 1921 corporate net after fixed charges was $6,388,891, or $856,589 less than the figure of $7,245,481 reported for 1920. The 1920 income account shows a "net income from property used in transportation service" of $26,434,295, this being $4,580,749 above the 1921 figure of $21,853,546 previously mentioned. The 1920 figure includes, of course, standard return for two months and guaranty for six which accrued to the road and compensated in part for the deficit after rentals which showed in the 1920 results. On the other hand, 1921 "other corporate income" of $10,120,824 ($4,720,966 greater than in 1920) includes amounts relating to the guaranty period chargeable to the government. The Baltimore & Ohio's four per cent preferred dividends of $2,354,529 were paid from surplus account, which on December 31, 1921, had a credit balance of $39,116,290.

Perhaps the most encouraging feature in the report, although not particularly commented upon or referred to by the company, is the strengthening of its surplus account through the conservation of income. Under the company's ten-year secured bonds, it obligated itself to reserve and apply to additions and betterments, or retirement of debt, $3,500,000 per annum, but with the suspension of dividend payments upon its common stock for the past several years, much more than this has been added annually to the surplus account, which shows a credit balance at December 31, 1921, of $39,116,290. The extent to which the company's income has been applied towards improvement of the property is indicated by the fact that notwithstanding there was expended on the property by the government during federal control for additions and betterments, $23,000,000, only $9,000,000 of these improvements have been funded through a ten-year secured note with the United States Railroad Administration.

### The Possibility of 1922 Dividends on the Common

A factor of much interest in connection with the Baltimore & Ohio at present, is, of course, the question of whether or not the company may in this year resume dividend payments upon its common stock. Baltimore & Ohio common stock dividends ceased in the second half of 1919. Disbursements in that year totaled only two per cent. This cessation of dividends followed uninterrupted payments for more than 18 years, beginning in 1900. From 1900 to 1906 the rate was 4 per cent; from 1907 to 1914, it was 6 per cent, and from 1915 to 1918, 5 per cent. In 1918 it was made 4 per cent. A reason why the resumption of dividends may commend itself to the directors of the company is that this step will apparently be necessary in order that Baltimore & Ohio bonds may continue to be legal investments for savings banks and trust funds in the state of New York and in some other states having laws similar to those of New York. This factor is of importance because of its possible effect on the refinancing which the company will be called upon to do in 1925 in connection with its four issues of bonds maturing in that year, totaling a principal amount of approximately $130,000,000. The question of the legality of investment in railroad securities was complicated by federal control but an opinion has been expressed by the attorney-general of New York State that any Baltimore & Ohio bond now rated as a legal investment will continue to be such during 1922. This has been generally accepted as implying that if no dividends are paid in 1922, the bonds will be removed from the legal class and similarly that if a rate of 4 per cent is resumed on the common this year, they will not be so removed. There is also a proviso that if a lapse should occur the bonds would fail to have a legal status until the dividend has been restored and maintained for a period of five years. However, while important, the investments by savings banks are not a controlling factor and it may be that the appeal to general investors would be greater if the company continued for a time to conserve its income and so continue to improve its reserves and credit position.

The two most important issues included in the total of $130,000,000 are the $74,910,025, 3½ per cent prior lien bonds issued in 1898 and maturing July 1, 1925, and the $44,991,390 Southwestern Division bonds, paying also 3½ per cent, issued on January 1, 1899, and maturing also on July 1, 1925. It is not necessary at this time to examine the possible means of refunding or extending these and the other issues involved. The important matter at present is the steps that may be taken to maintain them as legal investments.

Another interesting factor is that the present issues have a rate of 3½ per cent. No one would care to make a guess as to whether they can be refunded in 1925 at that rate. Under present conditions it does not look as if they could be. The possibility is offered, at any rate, that B. & O. interest charges may be further increased. This is a problem which has confronted Baltimore & Ohio for some time and especially in the past two years. In 1920 this was because of refunding government indebtedness arising out of federal control and in 1921 because of equipment trusts. The B. & O.'s interest charges in 1921 were $22,534,069; in 1919, they were $19,640,622 or $2,893,447 less. A favorable feature exists, however, in the fact that there is but a small amount of refunding of bonds to be done this year, in 1923 or in 1924.

### Favorable Earnings in 1922

Under the circumstances relating to the possibility of a dividend on the common stock this year, it is not unnatural that Baltimore & Ohio earnings statements should be given no small amount of attention. Interest in these statements is also, of course, intensified by the remarkable recovery which took place in net railway operating income in 1921. Fortunately this improvement has been continued into the present year. Even though the road was deprived from April 1 on of the better part of its coal traffic—bituminous coal makes up about 48 per cent of the total revenue tonnage—the net railway operating income so far this year has been considerably ahead of last year's.

The July statement showed the effect of the railway shopmen's strike. The Baltimore & Ohio did not start to fill the places of its strikers as soon as some of the other roads did. It held off while it was trying to make some sort of a separate agreement with its shopmen. The effect of this policy—which unfortunately did not secure at once the de-

sired results—was evidenced in the July net, but it remains to be seen whether in the course of several months it was better for the company to be patient and to ultimately resume operations with its old, trained forces rather than undertake to replace them and train new forces. The end of the coal strike and a heavy fall movement of commodities in general should readily make up, however, for what was lost in July. The net railway operating income for the month was $1,225,067 as compared with $2,026,782 in July last year. In each of the three previous months—those of the coal strike—the net railway operating income exceeded $2,500,000. In March, when coal was moving in anticipation of the strike, the figure was $3,081,212. For the seven months the report shows a net railway operating income of $15,805,362, as compared with a figure of $9,657,246 for the first seven months of 1921, an increase of $6,148,116.

It is interesting to observe that even with reduced coal loadings for April, May, June and July and also with reduced rates on many commodities, the freight revenues for the first seven months of this year were in excess of those for the same period of last year. The freight revenues of $89,676,196 for these months this year exceeded those of last year by $1,268,830. Expenses similarly continue less, those for the first seven months of this year totaling $89,244,692, or $7,792,546 less than those for the same period of last year. Under the present trying conditions, it is difficult to predict very far ahead, but it would appear on the whole as if in 1922 the Baltimore & Ohio should come through a great deal better than it did in 1921—even with the improvement which took place in 1921.

The Baltimore & Ohio's expenditures for additions and betterments to equipment in 1921 showed a net charge of $7,067,405. There were added 50 locomotives and 2,059 freight cars, and retirements included 5 locomotives, 2,400 freight train cars and 24 passenger cars. It will be remembered that during the latter part of the year large purchases were made of freight car bodies for the purpose of car rehabilitation. Additions and betterments to road totaled $3,518,124. This included enlargement of yards, etc., at Locust Point, Baltimore; a new bridge across the Miami at Lawrenceburg, Ind., was placed in service October 1, 1921, and there was considerable work done in the way of renewing and strengthening of a number of other bridges. Automatic block signals were installed on 12 miles of double track between Callery Junction, Pa., and Wildwood.

## Freight Car Loading

WASHINGTON, D. C.

THE NUMBER of cars loaded with revenue freight during the week ended on September 2 was 931,598, the largest reported for any previous week in eleven months and an increase of 40,760 cars over the previous week. Moreover, the increase was not all attributable to the increased coal movement following the more general resumption of bituminous mining, as the increase in coal loading over the previous week was only 38,457 cars.

The loading for the week of September 2 represents an increase of 100,310 cars as compared with the corresponding week of 1921, and a decrease of only 30,035 cars under the corresponding week of 1920, when 961,633 cars were loaded. It was also 91½ per cent of the total for the record week of October 15, 1920, when 1,018,539 cars were loaded. Coal loading had not yet reached normal proportions, although the coal loading for the week was 149,487 cars as compared with 111,030 during the week before. The coal loading was 5,099 cars less than for the corresponding week of last year and 49,513 cars below the corresponding week of 1920.

As compared with the previous week there were decreases in grain and grain products, livestock, coke, forest products and ore, but there was an increase of 3,350 cars in merchandise, l. c. l., and of 3,943 cars in miscellaneous freight.

Only the Southwestern district showed a reduction as compared with the corresponding week of last year.

The percentage of open top car requirements filled during the week of August 26 was 86, the same as the week before. In the corresponding week of 1920 only 49 per cent of the open top cars required were furnished. The total requirements for the week were 392,030, of which 338,785 were furnished and 284,703 were loaded.

The freight car surplus is rapidly dwindling. For the period from August 15 to 23 it averaged 120,961, a reduction of 12,292 cars as compared with August 8-15. This included 96,405 coal cars and 8,237 box cars. On the other hand, there were shortages amounting to 43,519 cars, of which 27,195 were box cars and 8,175 were coal cars. For the period from August 23 to 31 there was a further decrease in the surplus to 70,455, including 3,850 box cars and 54,566 coal cars. The shortage amounted to 58,670, including 35,819 box cars and 13,835 coal cars.

The Car Service Division has compiled charts showing the weekly variation in the loading of merchandise and mis-

REVENUE FREIGHT LOADED. SUMMARY—ALL DISTRICTS, COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO. WEEK ENDED SATURDAY, SEPTEMBER 2, 1922.

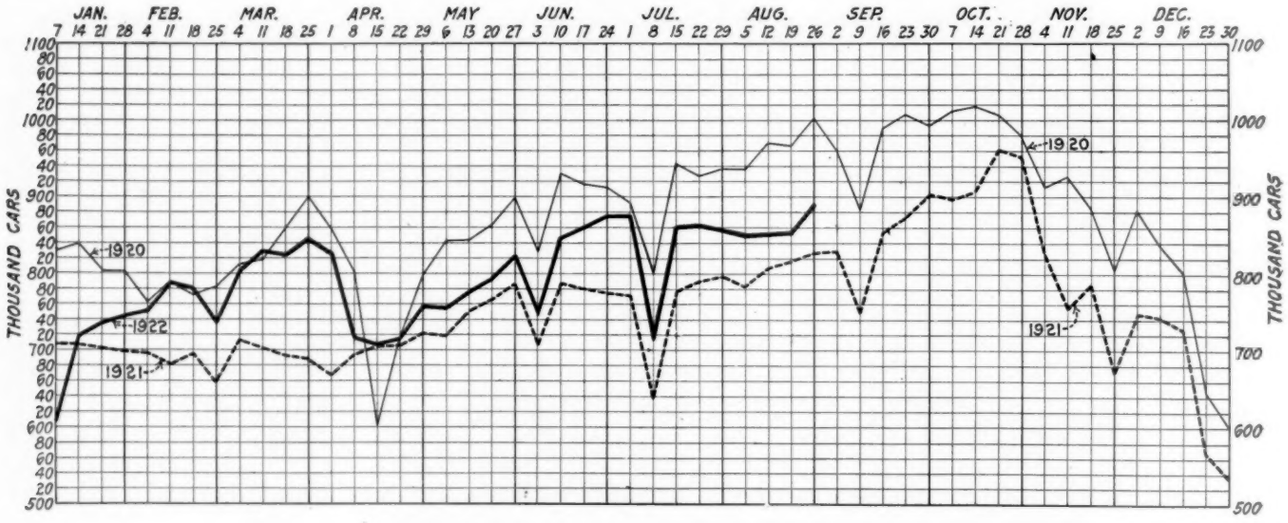
| Districts | Year | Grain and grain products | Live stock | Coal | Coke | Forest products | Ore | Mdse. L.C.L. | Miscellaneous | Total revenue freight loaded: This year, 1922 | Corresponding year, 1921 | Corresponding year, 1920 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Eastern | 1922 | 8,779 | 3,340 | 32,614 | 1,241 | 5,695 | 6,729 | 66,489 | 101,327 | 226,214 | ..... | ..... |
| | 1921 | 8,033 | 2,874 | 43,384 | 1,156 | 4,423 | 2,929 | 59,567 | 79,314 | ..... | 201,680 | 238,461 |
| Allegheny | 1922 | 3,117 | 3,145 | 42,730 | 4,560 | 2,989 | 10,602 | 49,892 | 79,380 | 196,415 | ..... | ..... |
| | 1921 | 3,051 | 2,969 | 43,659 | 2,218 | 2,479 | 5,970 | 46,296 | 59,676 | ..... | 166,318 | 201,622 |
| Pocahontas | 1922 | 221 | 281 | 20,900 | 216 | 1,089 | 22 | 4,863 | 2,465 | 30,057 | ..... | ..... |
| | 1921 | 149 | 268 | 14,647 | 88 | 1,117 | 3 | 4,661 | 3,685 | ..... | 24,618 | 35,921 |
| Southern | 1922 | 3,732 | 2,347 | 21,502 | 779 | 18,327 | 1,017 | 35,545 | 34,095 | 117,344 | ..... | ..... |
| | 1921 | 3,649 | 1,881 | 20,723 | 452 | 14,854 | 221 | 37,148 | 33,845 | ..... | 112,773 | 128,428 |
| Northwestern | 1922 | 19,853 | 8,167 | 6,510 | 984 | 15,487 | 41,306 | 30,100 | 36,903 | 159,310 | ..... | ..... |
| | 1921 | 20,067 | 6,484 | 8,853 | 459 | 10,536 | 20,614 | 28,995 | 33,995 | ..... | 130,003 | 161,167 |
| Central Western | 1922 | 13,763 | 11,606 | 18,729 | 469 | 7,924 | 2,186 | 31,614 | 54,028 | 140,319 | ..... | ..... |
| | 1921 | 19,263 | 10,091 | 18,486 | 150 | 5,927 | 763 | 31,020 | 45,217 | ..... | 130,917 | 133,650 |
| Southwestern | 1922 | 4,554 | 2,961 | 6,502 | 140 | 7,195 | 492 | 15,047 | 25,048 | 61,939 | ..... | ..... |
| | 1921 | 6,067 | 2,706 | 4,834 | 209 | 6,463 | 745 | 16,160 | 27,795 | ..... | 64,979 | 62,384 |
| Total Western Dists. | 1922 | 38,170 | 22,734 | 31,741 | 1,593 | 30,606 | 43,984 | 76,761 | 115,979 | 361,568 | ..... | ..... |
| | 1921 | 45,397 | 19,281 | 32,173 | 818 | 22,926 | 22,122 | 76,175 | 107,007 | ..... | 325,899 | 357,201 |
| Total all roads | 1922 | 54,019 | 31,847 | 149,487 | 8,389 | 58,706 | 62,354 | 233,550 | 333,246 | 931,598 | ..... | ..... |
| | 1921 | 60,279 | 27,273 | 154,586 | 4,732 | 45,799 | 31,245 | 223,847 | 283,527 | ..... | 831,288 | ..... |
| | 1920 | 42,573 | 29,048 | 199,000 | 14,674 | 62,229 | 77,804 | 205,839 | 330,466 | ..... | ..... | 961,633 |
| Increase compared | 1921 | ..... | 4,574 | ..... | 3,657 | 12,907 | 31,109 | 9,703 | 49,719 | 100,310 | ..... | ..... |
| Decrease compared | 1921 | 6,260 | ..... | 5,099 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Increase compared | 1920 | 11,446 | 2,799 | ..... | ..... | ..... | ..... | 27,711 | 2,780 | ..... | ..... | ..... |
| Decrease compared | 1920 | ..... | ..... | 49,513 | 6,285 | 3,523 | 15,450 | ..... | ..... | 30,035 | ..... | ..... |
| Sept. 2 | 1922 | 54,019 | 31,847 | 149,487 | 8,389 | 58,706 | 62,354 | 233,550 | 333,246 | 931,598 | 831,288 | 961,633 |
| Aug. 26 | 1922 | 54,562 | 32,046 | 111,030 | 8,390 | 60,466 | 65,041 | 230,000 | 329,303 | 890,838 | 828,883 | 1,001,308 |
| Aug. 19 | 1922 | 55,893 | 29,756 | 81,959 | 8,201 | 57,934 | 67,201 | 229,925 | 325,350 | 856,219 | 815,147 | 968,103 |
| Aug. 12 | 1922 | 57,567 | 28,370 | 84,559 | 8,420 | 56,163 | 69,197 | 230,652 | 317,652 | 852,580 | 808,269 | 971,269 |
| Aug. 5 | 1922 | 58,512 | 26,507 | 79,246 | 8,442 | 55,898 | 66,218 | 229,287 | 327,241 | 851,351 | 786,178 | 935,730 |

Compiled by Car Service Division, American Railway Association.

cellaneous freight for the years 1920 and 1921 and for 1922 to date. While most other commodities show heavier total loading in 1920 than in 1922, merchandise and miscellaneous freight has been running well over 1920 since the first week of April, and has been in excess of 1921 during the entire year.

The circular charts show a distribution of this class of loading between the different railroad districts for the period January 1 to August 19 in each of the last three years. The total number of cars loaded to date this year exceeds any of the two previous years. The Eastern and Allegheny districts amounting to 50.1 per cent of the total traffic in 1922, show an increase over 1920, while all other districts indicate a decrease.

Dumpings of coal at the lower lake ports for last week amounted to approximately 600,000 tons, with 9,380 cars reported at lake ports on Saturday morning, according to a statement by the fuel committee. As coal was not moving to the lakes under the normal No. 2 classification in sufficient quantities to make up the Fuel Distributor's program, priority No. 1 orders were issued on Saturday directing lake-




**Revenue Freight Car Loadings Up to August 26, 1922**

ward a sufficient tonnage of coal to insure the attainment of the full lake program for this week. These priority authorizations are being placed with a view to causing the least possible disturbance to the normal movement of coal. Difficulties experienced in the unloading of iron ore from boats at lower lake ports have been solved, and there is now no shortage of vessels for the transportation of coal to Lake Superior docks.

The fuel distributor has found it necessary to issue Priority No. 2 orders for the movement of a limited tonnage of coal necessary to keep some non-essential industries in the Southeast from closing. Authorization for the movement of 10,000 tons of coal from Norton, Virginia, to the State Fuel Administration of South Carolina has been given. Representations are being made from time to time that industries will be compelled to close unless given certificates of priority which will aid them in obtaining fuel supplies. These cases are being considered on their individual merits, under a general policy of issuing priority authorizations only where real emergency needs cannot be provided for by other means.

The Interstate Commerce Commission has announced a hearing to be held on September 21 on a petition filed by the National Association of Sand and Gravel Producers for a modification of Service Orders 23 and 24 to provide that after the most essential requirements for coal cars are taken care of, under the higher classes of the priority list, the available open top cars should then be distributed on an equal basis to all shippers requiring such cars, on the ground that shippers of sand and gravel are just as much entitled to cars for their products as manufacturers are to cars for fuel.

A total of 158,010 cars were loaded with coal last week, the week which ended on September 9, according to reports received by the Association of Railway Executives. This was a decrease of 9,418 cars compared with the preceding week, but had it not been for the observance of Labor Day, loadings last week would have exceeded the week before and been the largest since April 1 last when the miners' strike began. On Labor Day, only 10,021 cars were loaded, compared with 30,054 cars on the preceding Monday. Except for Labor Day the average daily loading last week was approximately 29,600 cars, while the average for the week before was only 27,900 cars.

On the basis of the number of cars loaded with coal, production last week was approximately 8,700,000 tons, compared with approximately 9,250,000 tons the week before.

Coal loadings on Friday, September 8, totaled 28,487 cars and on Saturday 27,527 cars, 960 cars less than the preceding day, but 2,370 cars above the previous Saturday. Loadings on Saturday, however, are generally lower than other week days owing to a short day being observed at most mines.

**With the American Relief Administration in Russia—While Bolshevik Soldiers Were Saying That Cameras Were Not Allowed an American Woman Snapped This Picture —Vechrova Yards, Near Moscow.**

# Functions of Department of Purchases and Stores*

## Great Possibilities in Securing a Better Control Over the Expenditures for Materials

By H. C. Pearce

Director of Purchases and Stores, Chesapeake & Ohio

THE PURPOSE OF THE division of purchases and stores is to provide needed materials for the construction, operation and maintenance of the property; to have accurate knowledge of what is available, the quality best suited for the purpose for which it is to be used, the time when the material will be needed, the proper storage and distribution, and proper accounting for same. These six general divisions include all the details of prices, freights, inspection, storage, handling, etc., down to and including the disposition of the salvage. The magnitude of the work can best be visualized by the fact that our Class 1 American railroads expend more than 1,250,000,000 for materials and supplies per annum, not including new equipment, made up of over 60,000 individual items, scattered over approximately 232,000 miles of railroad.

### Value of the Budget System

The budget system must be installed before any thorough or comprehensive expenditures can be carried on in an economical manner. An organization responsible for the expenditure of millions of dollars annually must first be capable of viewing the problem with knowledge that the money necessary will be available when the liabilities become due. Compare the amount of detail and practical knowledge necessary for the handling and accounting of this sum of money by our treasury and accounting departments and realize, if you can, how much more organization is required properly to safeguard this amount of money in the form of materials scattered over thousands of miles of railroad and you have at least a fair general idea of the inadequacy of the organizations now handling this work.

Railroad executives have viewed this problem in the past through the eyes of the using departments, and when the question of expense, as reflected by the payroll, came to their notice, their first thought was to turn the work over to the using department, with the idea that they could show a reduction in the payroll, when, as a matter of truth, the work must be done by others with less experience and knowledge, at higher rates of pay, or not done at all. The latter was usually the result.

Supply officers as a rule were not men of large vision or broad experience and did not have the knowledge or strength necessary to do the things they know should be done. To carry on work of such magnitude, it must be apparent to any one that has studied the facts that it must be controlled by an officer of strength of character and great energy and force, and the organization must be sufficient to care for each detail and record it properly so that exact knowledge may be had at all times. Supply officers, with few exceptions, have in the past accepted the situation as they found it, recognizing that it was better to keep their positions and satisfy or obtain favor with their superiors than it was to stand for principles. The results of such understanding, or lack of understanding, develops the fact that there are with rare exceptions no standard forms of comparison or standard methods, the purpose having been to muddle everything up as much as possible to prevent comparisons. Accounting officers were more interested in the appearance of the records than in the condition and control of the stock; their conception of the value of the stores department was their ability to obtain reports required on certain dates and an inventory of the assets, as reflected in neatly typed pages and summaries of figures, without thought of responsibility as to correctness of these figures other than the calculations. This work alone has been a terrific drain on the resources of supply officers. The using departments are only interested in the actual amount of material charged to specific work; the amount of material on hand has no interest to them, as under our system of accounting, nothing is charged until it is actually reported as used by the department that uses it.

These fundamental facts have prevented owners of railroad securities and executives realizing the tremendous investment they have, knowledge of what these investments are worth, and little or no knowledge of what the real cost of doing the work was. The principle underlying the accounting for materials is that nothing shall be charged to an account or piece of work until it is actually used. This is entirely wrong, regardless of the reasons for the plan. The fact remains that every account and every piece of work should bear not only the actual cost of labor and material, but all the costs incidental thereto, which should include losses due to faulty design, wrong estimates, errors in ordering, changes, delays in doing the work and all other causes incidental thereto. The plan that should be adopted under the budget system is that all material delivered to the work shall be charged to the account or work for which it was ordered. Whatever remains after completion shall be surveyed and credit allowed for its actual value. If this were done and the monthly budget system carried out as it is being rapidly developed, the using departments would be—as they should—responsible for every dollar which they order, and it would be shown at the end of the month just what they have expended. This one thing would do more to overcome the enormous quantities of materials which have been acquired on our railroads, which have either been held in suspense or become obsolete, than any other one thing, and without any added expense.

### A Financial Problem

The purchases on our railroads generally have been in the hands of honest, intelligent men, but they have lacked breadth of view and knowledge of details, which has seriously impaired their work. Lack of proper records which should be such as to enable them to know accurately daily the liabilities they were incurring, records of comparison with previous months and previous years, specifications which will enable them to develop the market and procure competition, have always tremendously handicapped the railroad purchasing agent. Probably no other department of a railroad is so dependent upon the accumulation of details as the service of supply. It is made up of details, and they must be accurately recorded each day, in simple and accurate form, in order to bring about proper control.

If I were asked what were the outstanding faults of the service of supply as a whole, I would say *price* and *payroll* comparison. They have been the curse of the supply de-

*Abstract of paper read before the New York Railroad Club, Friday, September 15, 1922.

partment. They have stunted the development of supply officers. They have stultified the ambitious and capable man. They have appealed to the selfish and self-seeking man, and in every way have been most harmful. The same thing has handicapped the railway executive. What encouragement is there for a railway executive, no matter how convinced he is of what is necessary in order to establish a strong, practical and capable organization, when the first questions his brother executives ask him are, "What are you paying your chief supply officer"; "What is the cost of operating your supply department"; "What are your average monthly issues"; or having his officers constantly dinging into his ears, "This is all very nice, but we have to pay for it out of our appropriation—it all goes into our operating expenses." Until this work can be raised to the point where there will be constantly staring the executives of our railroads in the face the fact that they have hundreds of thousands of dollars tied up in unused materials, costing not less than 25 per cent. per annum to maintain, representing monies which should be in the property or in the treasury, this organization will never be placed on the proper basis or perform the real service for which it is intended, and for this reason I repeat that the problem is a financial rather than an operating one.

Many splendid businesses have been wrecked by injudicious buying. I am a strong believer in the plan known as the "Thorne" system, introduced by the late W. V. S. Thorne, and carried out most successfully on the Harriman lines. The plan is simple, the first requirement being to definitely determine what is the most desirable material to purchase, based on service, source of supply and price. This having been definitely determined, a running agreement is made for the requirements, subject to cancellation by either party giving a stated period of notice. This insures a fixed source of supply, the quality of materials best suited for the requirements, and enables the manufacturer to produce it at the lowest cost. It eliminates the expense and delay of sending out inquiries, receiving proposals, tabulating bids, etc. Each day's delay between the time the need develops and the delivery is made represents a loss, either in interest or a loss through lack of delivery.

## More Specifications Needed

Broadly speaking, all materials should be bought to specifications. I know it will be contended that this is not always practicable. Manufacturers' agents who wish to sell some special brand, or mechanics and others who prefer to criticise the quality of something rather than write a specification, will not approve the plan. Our technical officers should be able and should be required to put their knowledge of what is required into a specification. Three factors should be taken into consideration in preparing a specification: (a) the service required, (b) the source of supply, (c) the cost. If representatives of each of these factors—i. e., the user, the manufacturer and the buyer, were consulted in their preparation, 90 per cent. of the materials used on our railroads could be covered by practical and economical specifications. Specifications without test are worthless and how is any buyer to know what he is getting unless the material is inspected and tested, and how can it be tested unless it is built to a specification? It is the only practical plan either for the manufacturer or buyer. I had hoped that the American Railway Association would adopt minimum specifications. With minimum specifications the manufacturers have a base to work to; any railroads or service requiring something better than the minimum specification can procure it at the lowest cost because there is a base. It is the only way to obtain necessary and honest competition. Because railroads have not followed generally the plan of buying material to specifications in competition is one of the reasons why we have the Clayton Act. I further believe that it is mandatory for public carriers to offer every responsible manufacturer an opportunity to bid on its requirements, and this cannot be carried out in a practical manner without practical specifications and tests.

The engineer of tests should report to the chief supply officer for the reason that it is desirable that materials should be arranged for in advance of the need. The engineer of tests on our railroads should be investigating and reporting on the requirements, source of supply, conditions and facilities of manufacturers at all times. If this were done as it should be there would be very little inspection required at destination, and none of the long, tedious and expensive delays in receiving materials that fail to conform to the specifications being held up by long and many times useless correspondence.

It will be said that the engineer of tests should be independent or report to the using department, on the ground that they are responsible for the kind of material to be used. My answer to this question is that the using departments are responsible for the specifications and the supply department is responsible for furnishing material to the specifications.

## Distribution of Material

Material has no value either to the railways as capital or to the using department as service until it reaches the points where it is needed to be used. It is essential, therefore, to determine upon methods which will best enable the railway company to conserve its assets and make them available when wanted in the least possible time. Material must be first assembled and maintained at as few points as possible for distribution, for the reason that it represents money, which must be as closely guarded and conserved as if it were in the bank. Desirability of this is based principally upon the following facts:

(1) Generally there is only one place where there is sufficient organization for thorough check, test and care of materials;

(2) Materials can be inventoried more readily when centralized;

(3) By restricting the number of places where stocks are carried a smaller fixed investment will be found sufficient to adequately protect the needs of all departments.

The shops, representing the largest users of classes, if not values, must first be considered, and a practical plan is for the stores department to deliver the materials to the users in the shops. This keeps high priced mechanics at their work and their machines in operation during a period which otherwise would cause them to be absent procuring needed materials, and it enables the supervisory forces to keep in touch with the progress of the work and the actual needs of the mechanics. The shop delivery system assures accuracy in accounting by requiring that all material orders be revised and the proper description entered thereon. It provides the means for obtaining an order for all material issued; enables store department employees to observe the use of materials by coming in personal contact with the men who are actually using it; it provides a method by which they can intelligently anticipate and provide for the needs and satisfy themselves that the material will be utilized as intended. It results in delivering materials to points required in less time than other systems now in effect and at less expense; insures an opportunity for locating and returning to stock materials drawn for use and not applied; it insures proper supervision over the manufacture of materials and the return of the finished or repaired product to the stores when completed; it encourages the use of serviceable second-hand and repaired material in lieu of new and by co-operation provides for the disposition of shop worn material in proper sequence, thus avoiding the inadvertent disarrangement of stock.

The supply train serves the same purpose for the line that

the store delivery does for the shops and in precisely the same way. It places the representative of the supply department in personal contact with the users on the line; it places the storehouse at the disposal of the men; it establishes the closest relations between the two, which, when coupled with a thorough inspection by the supervisory officers, as it should, furnishes the ideal method of distributing material on the line.

This system is in use by many large railway systems of the country. The reason why the supply train has not been generally adopted is due to the fact that there has not been a sufficiently broad conception of what the service of supply should embrace. The supply, or what is commonly called the stores department, is looked upon as merely a depot where supplies should be procured when ordered, and the storekeeper in charge merely as the man who hands them over the counter. It has occurred to few that the service of supply must be based on broad enough lines so that its agents should know what is actually needed, what gives the best service for the purpose, and have means at their disposal whereby they can come in personal contact with the users on the ground. The supply department is responsible not merely for having materials, but also the quantity and quality, and must also dispose and market the salvage.

### Reclamation

Reclamation in its broadest sense has been generally misrepresented and largely misunderstood. Reclamation means making useful that which has been discarded. The fundamental principle underlying reclamation is that nothing must be reclaimed that will not be needed for future use or that cannot be reclaimed at a saving, and in order to guard against losses or incorrect conclusions an accurate record must be kept covering each operation, from which a monthly statement should be compiled showing the net results (savings or loss) on each item of material reclaimed.

There is one feature of this work which operating and maintenance officers seem to lose sight of, and that is, that the supply department has not taken over any of the functions of the maintenance department in salvaging materials; they have taken over this work after the using departments have finished with it. The using departments are expected and should be required to get the utmost service out of their materials and tools and not permit them to be turned over as scrap to be salvaged until they have performed their full service. The following outstanding features of this work must appeal to all practical men:

(1) That the supply department is organized for the purpose of supplying materials, and the reclaiming of materials is one of its sources of supply;

(2) That the work of dismantling, disposing and sale of all materials, including released equipment, is one of the duties of the supply department;

(3) That this work can be done more economically in conjunction with the handling and marketing of scrap, of which it is a part.

### Railway Storehouse Not a Reservoir

All primary accounting should be done at points where the materials are issued. In no other place can basic accounting be done as economically and accurately. All materials must be received and checked by the storekeeper. The same material must be priced and either invoiced to the using department or charged direct to the primary accounts. In no other way can the storekeeper keep control of the stock and control his business. The supply officer is the fiscal agent of the company. The money invested in material is enormous. Every dollar invested unnecessarily in materials is unliquid and unworking capital. The railway storehouse is not a reservoir, but a bank. Material is not junk, but cash, and must be as safely guarded and controlled as cash.

There is an unlimited field for practical reform in our accounting system, which can only meet the full possibilities when our railroad executives realize that decentralization must take place and the records made complete on the ground.

### What Has Been Done on the C. & O.

Probably the property with which I am connected is a fair example of many large-earning, reasonably well-managed properties, and its material conditions were probably not out of line with the majority of railways. The stock on hand April 30, 1921, was $15,830,416. On June 30, 1922, the stock on hand was $8,591,088. No unusual work was performed. On the contrary maintenance was greatly curtailed during the first half of the year 1921. No additional facilities were provided, and only applied common sense was required to accomplish this, but it was necessary to have men who knew what to do at the time. It was not sufficient to have well-meaning, honest men that were willing to learn.

The first step was to find out what we had and where it was. This was accomplished by starting men out over the line taking lists of everything that was on hand, on rough pencil sheets, being careful to give accurate description and location. These sheets were forwarded daily to a central location where they were transcribed on to cards. The cards were arranged alphabetically. All requisitions were sent to a central location, checked against these cards and the material transferred.

This was merely a bridge until a permanent organization could be built. Where storehouses or platforms were not available, ground was leveled off and rough timbers laid down, the material sorted and every piece marked or stencilled. After it was all segregated and marked, it was listed in books by classes. From these books a master book was built up which contained every item on the road, properly described. We were then in position to discontinue the monthly inventories and card indexes and start in with basic records. The next move was to consolidate the material at as few places as possible. Everything that was not used at a particular point was consolidated at the principal shops and a general store established, leaving only a 30 or 40 days' supply at local points. We continued the monthly inventory and transfer cards for the maintenance of way material until arrangements could be made to handle it in the same manner. We procured an appropriation covering the expense of work trains sufficient to pick up and assemble the maintenance of way material in the same manner, but the shop crafts' strike on July 1 prevented us from carrying out the plan, which will be taken up as soon as the strike is over.

I merely mention these simple things to illustrate what anyone can do, no matter what the condition of the material is, or lack of organization. We had absolutely nothing; neither organization, storehouse facilities nor records; only the confidence and support of our president.

Owners of railroad securities and executives have quite recently passed through a period which has opened their eyes to the need of better control of their expenditures for materials. If this experience has not shown them that something was radically wrong with their supply department, nothing can be said or written that will be likely to have any effect.

Unless the chief executive of a railroad is in entire sympathy with such an organization and has the courage to select and support the man whom he places in control, nothing lasting or substantial can be obtained. Reforms must begin at the top. The real responsibility rests with the chief executive, who must first satisfy himself that the need exists, select the man whom he believes capable of organizing the department (because it is almost entirely a matter of organization), give him support, and he will be satisfied with the results.

# Coal Production

WASHINGTON, D. C.

INSTEAD OF THE 9,400,000 tons suggested by the first reports, final returns on soft coal production show only 9,142,000 tons in the week ended September 2, according to the weekly bulletin of the Geological Survey. The record of the week was awaited with interest as an indication of the supply to be expected after general resumption of mining under the Cleveland agreement. In the week of September 4-9, because of the Labor Day holiday, the output can hardly exceed 8,700,000 tons.

Production of anthracite, though expected shortly, has not yet been resumed.

The trend of output, day by day, is shown by the statement of cars of bituminous coal loaded. The early promise, as indicated by loadings of 30,662 cars on Monday, August 28, was not fully borne out by the reports of Friday and Saturday, when loadings dropped to 27,040 and 25,517 cars, respectively. On Labor Day 10,021 cars were loaded by the non-union mines, confirming the experience of other years that the day counts for a third of an ordinary working day. The double holiday on Sunday and Monday increased the number of empty cars available for placement on Tuesday and on that day 33,085 cars were loaded, the largest number on any day since last March. On Wednesday, however, loadings dropped to 30,652 cars and on Thursday to 28,238 cars. These returns suggest a total output for the week of between 8,300,000 and 8,700,000 tons.

| | 1st Week | 18th Week | 19th Week | 20th Week | 21st Week | 22d Week | 23d Week |
|---|---|---|---|---|---|---|---|
| Monday | 11,445 | 15,102 | 16,229 | 15,703 | 18,601 | 30,662 | 10,021 |
| Tuesday | 11,019 | 11,446 | 13,729 | 13,032 | 17,801 | 28,197 | 33,085 |
| Wednesday | 11,437 | 12,447 | 13,368 | 12,531 | 18,524 | 28,641 | 30,652 |
| Thursday | 11,090 | 12,380 | 13,277 | 13,521 | 19,388 | 28,687 | 28,238 |
| Friday | 11,296 | 12,669 | 13,539 | 13,718 | 22,882 | 27,040 | ..... |
| Saturday | 8,888 | 12,405 | 11,009 | 13,524 | 23,070 | 25,517 | ..... |

"The limiting factor in the supply of soft coal has now become transportation," the bulletin says. "It is true that some thousands of miners are still on strike, notably in the Connellsville and Kanawha districts, but the tonnage offered for shipment by the other mines at work will absorb the available transportation facilities. The demand for coal is active and prices are high. Under such conditions coal is offered for shipment up to the limit of the ability of the railroads to transport it.

"The present rate of production is 9,600,000 tons a week. In the corresponding period of 1920 the average was 11,750,000 tons; in 1919, 11,340,000 tons; and in 1918, about 12,800,000 tons. The present rate of soft coal movement, even with priority in use of open-top cars, is therefore 25 per cent below 1918, 15 per cent below 1919, and 18 per cent below 1920.

"The Cleveland agreement itself was concluded on August 15 and 16. By Saturday of that week it had been accepted by the majority of operators in Ohio, Fairmont and Michigan, and in part of Central Pennsylvania, and by that time coal was beginning to move from these mines.

"The following week (August 21-26) was marked by a series of local wage conferences, and by the acceptance of the Cleveland settlement in district after district. In rapid succession agreements were signed in the Kanawha and Michigan section of West Virginia, in Montana, Illinois, Indiana, Wyoming, the Southwest Interstate Field, and Central Pennsylvania. Before the week ended only Washington and Pittsburgh of the strongly organized districts had failed to reach an agreement.

"In the meantime output in the non-union fields of the Middle and Southern Appalachians continued to be limited by transportation. The mines in the Logan district alleged a loss of 73.4 per cent of full time capacity on account of transportation. In the Winding Gulf field the loss was 63.7 per cent, and in Northeastern Kentucky 56.0 per cent. Transportation difficulties were most acute in the Hazard and Harlan districts, where losses of 71.5 and 89.6 per cent were reported. There was, however, a slight improvement in car service as compared with the week preceding."

The all-rail movement of coal to New England during the week ended September 2 comprised shipments of 1,232 cars of bituminous coal and 151 of anthracite over the six principal Hudson river crossings and 19 cars of bituminous coal through Rouses Point. The aggregate, 1,402 cars; was an increase of 259 cars, or nearly 23 per cent, over the preceding week. The total all-rail forwardings this year to September 2 amounted to 112,025 cars divided as follows: 50,710 cars of anthracite and 59,777 cars of bituminous coal through the principal gateways and 223 cars of anthracite and 1,315 of bituminous coal through Rouses Point.

Under the Federal Fuel Distributor's orders directing coal to Lake Erie ports total shipments during the week ended September 2 increased 79 per cent, and according to reports from the Ore and Coal Exchange a total of 463,242 tons was dumped as against 258,598 tons in the week preceding. Of the total, 432,281 tons were cargo coal and 30,961 tons were vessel fuel. The present rate of dumpings was 79 per cent of that in the corresponding week a year ago. The total quantity of cargo coal forwarded during the present lake season now stands at 5,337,275 tons as gone to destinations not ordinarily taking lake coal. The quantity sent to the regular lake markets is only 4,441,043 tons as against 16,216,834 in 1921, and 11,346,697 in 1920.

Shipments of bituminous coal through Hampton Roads increased in volume during the week ended September 2. Dumpings for the week of September 2 totaled 369,685 net tons, as against 310,593 tons the week before. Cargo coal for export decreased, whereas coal for New England and other coastwise destinations and bunker coal increased.

After the Sunday and Monday holiday total shipments on Tuesday were the largest recorded for the period since April 1. On the next day they were less, but were higher than on any preceding Wednesday. Aggregate shipments during the first half of last week, considering Labor Day equivalent, as usual, to about three-tenths of a full day, were at the rate of 1,600,000 tons a day. This rate exceeded by 15 per cent and 65 per cent, respectively, the daily averages for the preceding week and for the week before that.

Pennsylvania districts showed continued increase on Wednesday. In northern West Virginia, Ohio, Indiana, and Illinois, the rapidly rising rate of shipments was checked by transportation difficulties.

In the non-union districts of southern West Virginia, Virginia, Kentucky, and Alabama shipments have declined generally, but the Logan, Pocahontas-Tug River, and parts of Eastern Kentucky shipments increased this week although still far behind the high rate attained late in June.

In the region immediately west of the Mississippi river shipments have increased regularly from day to day and on Wednesday, September 6, were higher than previously reported this season.

The Colorado coal fields early last week shipped at about the rate of the week before, which was less than previous weeks. Marked increases were shown last week in Utah and New Mexico, whereas in Washington there was a decrease as compared with the week before.

Lake coal now being loaded is moving almost entirely under its natural Class 2 movement and with only a very limited application of the No. 1 priorities. A problem in the transportation of lake coal has arisen because of delays in the unloading at lower lake ports of cargoes of iron ore from the northern ranges from boats which carry coal on their return trips to Lake Superior ports. This delay in unloading ore boats which has been occasioned by deficiencies in the railroad car supply, will be obviated, it is hoped, by the issuance of special permits for the use of cars to transport iron ore.

It is probable that arrangements will have to be devised to insure at least a partial supply of anthracite for the upper lake region. In normal seasons between 3,000,000 and 4,000,000 tons of anthracite are shipped to upper lake territory, the great bulk of which goes by the water route through Buffalo, N. Y., and Erie, Pa. It is hardly possible at this juncture to supply the lake region with its normal anthracite requirements, but it is hoped that a considerable percentage, perhaps 50 per cent of the normal supply may be provided. In the consideration of the lake anthracite problem, the demands of the Eastern and Northeastern regions for hard coal have to be taken into account.

Fuel Distributor Spencer is still receiving a large number of urgent requests for coal. These requests come to a considerable extent from the southeastern states, notably Mississippi, eastern Tennessee and North and South Carolina. Artificial gas manufacturing companies in the northern states continue to ask assistance in obtaining coal for gas making purposes. The State Fuel Administration of Massachusetts has informed the Fuel Distributor that it will require no

Secretary Hoover, of the Department of Commerce, and further supplies of emergency coal.

Fuel Distributor Spencer conferred with members of the Pennsylvania Fuel Commission and representatives of the anthracite producers in Philadelphia on September 7 with a view to assuring an equitable and expeditious distribution of hard coal supplies, when available.

The railway fuel situation last week was reported as apparently much easier, and railroads generally, with the exception of certain lines in the southeastern part of the country, are obtaining coal supplies. The Fuel Committee is endeavoring to take care of the needs of certain short-line railways in the Southeast.

The Federal Fuel Distributor is at present issuing very few priority orders for the movement of coal. The policy at present being pursued is to limit the use of No. 1 priority orders to cases of keen emergency and then to apply the priority only against coal under contract.

A conference has been called by the President's Fuel Committee, in co-operation with the United States Chamber of Commerce, to be held in Washington on Friday, September 15, to be comprised of business, industrial railway and public utility representatives, to consider various measures in amelioration of the coal situation. The conference will consider specifically the organization of a voluntary campaign of—

(a) Measures for expedition of coal movement.

(b) Measures for restraint on accumulation of unnecessary coal stocks by business and industrial consumers.

(c) Measures for placing upon the public market some part of the production of the mines normally producing for certain industries.

(d) Other methods for expediting return of the coal situation to normal.

The co-operation of the responsible coal operators will also be requested, the general purpose of the movement being that prices may be quickly readjusted downward, the householder and small consumer immediately supplied, and the coal situation returned to normal.

Julius Barnes, of Washington, and Alexander Legge, of Chicago, are acting for the United States Chamber of Commerce. The invitations to the conference have been issued by Secretary Hoover of the Department of Commerce on behalf of Fuel Distributor Spencer, Commissioner Aitchison of the Interstate Commerce Commission and Dr. Foster Bain, director of the Bureau of Mines, representing the Department of the Interior.

Except for seven different days in March, more cars were loaded with coal on Monday, September 11, than on any one day this year, either before or after the coal miners' strike began on April 1. Loading on Monday totaled 35,808 cars. This exceeded the previous record loading since the miners' strike began by 2,723 cars, that record having been made on September 5, when the total was 33,085 cars.

Coal loadings on Monday were equivalent to a weekly production of approximately 11,800,000 tons and exceeded the average daily loading in September last year by 11,251 cars, and the daily average for August this year by 18,745 cars.

DAILY SHIPMENTS OF SOFT COAL FROM PRODUCING DISTRICTS

Net tons, assuming 50 tons to the car, based upon records of cars loaded, as reported by the railroads to the American Railway Association

| District | Average wk. ended Aug. 26 | Average wk. ended Sept. 2 | Monday Sept. 4 | Tuesday Sept. 5 | Wednesday Sept. 6 |
|---|---|---|---|---|---|
| Central Pennsylvania | 75,958 | 141,225 | 15,200 | 158,750 | 163,650 |
| Western Pa., including Freeport | 39,325 | 61,292 | 6,600 | 89,150 | 133,050 |
| Greensburg-Westmoreland | 39,425 | 44,225 | 21,300 | 49,900 | 52,250 |
| Connellsville & Somerset-Meyersdale | 58,742 | 59,750 | 39,400 | 67,750 | 69,300 |
| South Fork nad Windber | 8,042 | 14,842 | 3,500 | 17,750 | 17,250 |
| Total Pennsylvania | 221,492 | 321,334 | 86,000 | 383,300 | 435,500 |
| Georges Creek, Upper Potomac and Cumberland-Piedmont | 14,883 | 15,017 | 3,650 | 12,500 | 13,350 |
| Fairmont & W. Va. Panhandle | 87,191 | 100,383 | 12,700 | 155,900 | 115,300 |
| Coal and Coke | 8,858 | 6,217 | 9,600 | 7,850 | 7,250 |
| Kanawha and Coal River | 18,092 | 20,750 | 13,700 | 20,900 | 13,250 |
| Logan | 27,225 | 26,708 | 28,900 | 11,600 | 35,100 |
| New River (C. & O. New River Div.) | 19,367 | 18,642 | 16,300 | 30,500 | 21,450 |
| Winding Gulf (Virginian) | 17,383 | 18,825 | 13,350 | 16,600 | 16,700 |
| Pocahontas and Tug River | 71,067 | 67,583 | 75,900 | 31,950 | 62,550 |
| Kenova-Thacker | 27,400 | 26,308 | 35,150 | 30,600 | 22,700 |
| Total W. Va. and Md. | 291,466 | 300,433 | 209,250 | 318,400 | 307,650 |
| Eastern Kentucky | 51,733 | 51,467 | 67,600 | 47,650 | 50,300 |
| Western Kentucky | 59,258 | 42,975 | 2,600 | 61,450 | 44,050 |
| Tennessee | 16,800 | 14,492 | 13,850 | 17,100 | 15,900 |
| Clinch Val. & S. W. Va. | 22,475 | 21,433 | 30,050 | 22,550 | 17,300 |
| Alabama and Georgia | 50,842 | 44,166 | 44,300 | 50,250 | 46,800 |
| Ohio | 94,408 | 115,508 | 2,500 | 156,250 | 130,000 |
| Indiana-Illinois | 79,308 | 330,008 | 50 | 401,950 | 345,950 |
| Iowa, Mo., Kans., Okla., Ark. and Texas | 19,675 | 51,508 | 1,750 | 67,950 | 69,750 |
| Colorado | 34,525 | 29,167 | 5,400 | 28,200 | 29,250 |
| New Mexico | 6,034 | 7,225 | 7,450 | 7,650 | 10,300 |
| Utah | 16,783 | 16,458 | 12,300 | 18,850 | 26,050 |
| Wyoming, Mont. & N. D. | 10,584 | 40,151 | 0 | 54,400 | 53,000 |
| Washington | 3,708 | 3,983 | 0 | 3,800 | 2,400 |
| Michigan | 1,475 | 3,892 | 0 | 3,750 | 3,650 |
| Total, East of Mississippi River | 889,257 | 1,245,708 | 456,200 | 1,462,650 | 1,397,100 |
| Total, West of Mississippi River | 91,309 | 148,492 | 26,900 | 180,850 | 191,050 |
| Grand total, bituminous shipped | 980,566 | 1,394,200 | 483,100 | 1,643,500 | 1,588,150 |

FORTY-SIX LOCOMOTIVES, valued at $783,000, were exported from the United States during June. Of these 25 went to Argentina.

EXPORTS of freight cars in May totaled 490, valued at $998,076. Passenger cars exported numbered 8, valued at $11,237. Of the freight cars, 400, valued at $880,000, went to Argentina.

*Photo by Ewing Galloway, N. Y.*

**Transvaal Express Leaving Laurenço Marques, Portuguese East Africa**

# General News Department

**The Western Railway Club** has postponed its September meeting and will hold its next regular meeting in October.

**The Telegraph & Telephone Section** of the American Railway Association, W. A. Fairbanks, secretary, announces that the annual meeting of the Section, scheduled for September 19, 20 and 21, has been indefinitely postponed.

**Graysonia, Nashville & Ashdown** is the name of the successor to that part of the Memphis, Dallas & Gulf which extends from Ashdown, Ark., on the Kansas City Southern and the Frisco Northeast to Shawmut, on the Missouri Pacific, about 60 miles. The new company is preparing to rebuild the line. It is planned to use motor cars for passenger, express and baggage service. C. M. Conway, of Texarkana, Ark., heretofore general agent, has been elected president and general manager of the new company.

**Henry Ford** professes to believe that the members of the Interstate Commerce Commission are only pawns in the hands of New York financial interests. In a statement given out at Detroit last Wednesday he declared that by its control of empty coal cars the Commission aids the coal profiteers. He said, as quoted in the dispatches:

"The same interests who own the public utilities, railroads and mines are using the commission as part of their scheme to fleece the public. If this commission ever was useful, it now has outlived its usefulness. If the Government had desired, it easily could have stepped in and given the public all the coal it needed. Why should it let the Labor Board set the wages for the railroad crafts so far below a living wage that they would strike? Why should the I. C. C. permit the Louisville & Nashville to carry a $70,000,000 surplus and keep an insufficient one-track road serving the most productive coal fields. The commission should have insisted that the L. & N. build adequate facilities into the heart of this great coal region. With a wonderful opportunity for public service, the I. C. C. widely misses the mark."

## Northern Pacific Sued by Strikers

Former Northern Pacific shopmen at Pasco, Wash., 28 in number, have filed suits against that railroad for $1,000 each, as damages for alleged refusal of the company to employ them. After the strike was declared the railroad management decided to build a fence around the shops at Pasco, and a contract for building the fence was let to a construction concern. The 28 idle shopmen applied for work on this job but were rejected.

## Freight Loss and Damage Payments in May

Figures compiled by the freight claim division of the American Railway Association show that the total charged to loss and damage by the railroads of the country in May, 1922, was $4,258,941 as compared to $8,333,320 for the same month in 1921, a decrease of 48.9 per cent. For the five months ended May 31 the total charged to loss and damage was $23,414,363, as compared with $47,388,357 for the same period last year, or a decrease of 50.6 per cent.

## Burlington 72 Years Old This Month

On September 2 the Chicago, Burlington & Quincy completed its seventy-second year of service. Under the name of the Aurora Branch railroad, with tracks extending from Aurora, Ill., to Turner Junction (West Chicago), a distance of 12 miles, it began serving the public on September 2, 1850. At that time its equipment consisted of one locomotive, one passenger coach and two combination baggage and freight cars. The road was built to meet local requirements and the promoters of the Aurora road harbored no idea of extending their line beyond the boundaries of Illinois. However, during the years following the management took advantage of the opportunities presented to build a large transportation system until today the Burlington has 9,389 miles of line, 1,955 locomotives, 1,389 passenger cars and 72,131 freight cars and employs more than 50,000 officers and employees.

## Automatic Train Control on C. & N. W.

The Chicago & North Western has contracted with the General Railway Signal Company, Rochester, N. Y., for an installation of automatic train control between West Chicago, Ill., and Elgin. [West Chicago is 30 miles west of Chicago and Elgin is 12 miles north of West Chicago.] The line to be equipped has some double track and some single, with both mechanical and electric interlocking plants. The intermittent induction type will be used, with speed control.

## T. and T. Convention Postponed

The annual convention of the Telegraph and Telephone section of the American Railway Association, which was scheduled to be held at Colorado Springs, Colo., on September 19-21, has been indefinitely postponed according to a notice issued on September 6 by Chairman W. H. Hall and Secretary W. A. Fairbanks. The notice reads as follows:

"Owing to the present conditions the Committee of Direction has decided that it is advisable to postpone the fall session (annual meeting) of the Telegraph and Telephone section."

## New Union on M. & St. L.

The shop employees of the Minneapolis & St. Louis have organized a new union under the leadership of W. A. Liehl, who has been elected president. "We have formed this association at the suggestion of the wage board," Mr. Liehl said. "We have a set of officers who can be dealt with and, in a diplomatic way can settle disputes, thus avoiding friction and strikes. Our organization will extend to all the shops of the road. I believe that 75 per cent of the striking shopmen who are out did not go out of their own free will; and they fear the torrent of abuse they would get if they went back to work."

## New Cars in 1922

The railroads of the United States, in the seven months from January 1 to August 1 this year, had 25,763 more new freight cars, either ordered and under construction or installed in actual service, than during the entire year of 1921, according to a statement issued by the Association of Railway Executives; seven months this year, 95,199 cars; 12 months of 1921 a total of 69,436.

Of the total ordered or installed this year, 41,405 were coal cars and 39,612 were box cars. The railroads are also augmenting their supply of refrigerator cars. On August 1, 3,870 had actually been installed and placed in service, while 6,428 more had been ordered.

## Labor Board Again Rules Against Contracting

Several decisions directed against the practice of contracting on various railroads were handed down by the Labor Board on September 11 and subsequent days. These decisions, involving the Erie; the New York Central; the San Antonio, Uvalde & Gulf; the Great Northern; the Chicago and North Western; the Cincinnati, Indianapolis & Western; the Chicago, Milwaukee & St. Paul and the Chicago Great Western, follow, practically word for word, the Board's ruling in the Indian Harbor Belt case described in full in the *Railway Age* of May 13, page 1111.

In every case the practice complained of by the employees had been discontinued before or soon after the strike of shopmen began on July 1. At the Board's inquiry on June 31 into the strike

situation all of the roads involved in these decisions, except the Erie, announced the discontinuance of the practice of contracting or made a promise to do so as soon as possible.

## Safety on the Southern

The Southern Railway announces that since March 1, 1920, the end of federal control, it has had the comfort of being able to record, month by month, that no passenger has lost his life by accident while on one of its trains. During these thirty months the company's trains carried passengers equivalent in number to nearly half the population of the United States. On the other hand, during the same period, there has been a steadily growing toll of fatal accidents at highway crossings on this company's lines. For three periods of two years each the records show:

| | Railroad Passengers Killed on Trains | Automobile Passengers Killed on Road Crossings |
|---|---|---|
| 1912-1913 | 7 | 7 |
| 1913-1914 | 8 | 19 |
| 1921-1922 | 0 | 58 |

Attention is called to the fact that from a social standpoint the driver of an automobile has the same duty of taking all needed precautions as has the railroad company.

## Canadian Engineers Meet at Winnipeg

The Engineering Institute of Canada held its thirty-sixth annual professional meeting at Winnipeg, Man., on September 5-7, with approximately 200 members in attendance. J. G. Sullivan, consulting engineer, Winnipeg, and formerly chief engineer of the Canadian Pacific, Western lines, presided. The first day was devoted to the presentation and discussion of papers describing the hydro-electric plants in the vicinity of Winnipeg which were visited on the following day. On Thursday separate meetings were held for the civil, geological and mechanical sections of the society. Among the papers of interest to railway men which were presented before the society on Thursday was one by S. B. Wass, terminal engineer, Canadian National, on the Construction of the Moncton Yard and Engine Facilities, which was abstracted in the *Railway Age* of September 9, page 463. Following this a paper was presented on Automatic Grain Car Unloaders for the Canadian National Railways at Port Arthur by Fred Newell, mechanical engineer, Dominion Bridge Company, Ltd., Montreal, which is reprinted on another page in this issue. Professor T. Thorvaldson of Saskatchewan University, presented a paper on the Disintegration of Concrete of Alkaline Ground Waters in which he described the extensive investigations which are now under way to determine means of arresting and overcoming the attacks on railway and other structures.

## Railway Earnings for July

The railroads of the United States had a net operating income in July amounting to $69,239,000, equal to a return on an annual basis, of 4.04 per cent on their tentative valuation. In June the net operating income was $76,594,000, or 4.79 per cent.

The railroads fell short by $29,332,800 of a return of 5¾ per cent, the figure fixed by the Interstate Commerce Commission in its recent rate decision.

Operating revenues in July totaled $443,183,000, a decrease of 4.3 per cent below July last year; operating expenses $340,725,800, or 6.1 per cent under 1921.

For the first seven months this year the railroads had a net operating income of $418,271,000, compared with $214,713,400 during the same period last year; an annual rate of 4.36 per cent, compared with 2.24 per cent in the first seven months last year. Operating revenues for the first seven months in 1922 amounted to $3,054,531,000, a decrease of 2.6 per cent under the same period last year, while operating expenses totaled $2,419,602,000, or 11.2 per cent decrease.

The carriers in the Eastern district had a net operating income in July of $24,165,400, compared with $31,054,370 in July last year; in the Southern district $6,479,000, compared with $4,703,000, and in the Western district $38,594,500, compared with $33,566,800.

Despite the strikes of coal miners and shopmen, loading of revenue freight in July increased 10 per cent over the same month last year. Coal loading during the same month, however, was approximately 48 per cent under July, 1921 but loading of all commodities other than coal increased nearly 24 per cent. Measured in net ton miles, there was a decrease in freight traffic of approximately 4½ per cent under July last year.

The tabulations as to earnings are based on the reports of 197 Class I railroads representing a total mileage of 235,221 miles. There were formerly 201 Class I roads but because of the consolidation of reports by a number of railroads with subsidiary lines which heretofore had been classified separately, the number of Class I roads named in the reports is now 197.

## National Association of Railway Commissioners

The thirty-fourth annual convention of the National Association of Railway and Utilities Commissioners will be held at Hotel Tuller, Detroit, Mich., beginning on Tuesday, November 14, the date having been changed from September 26 by action of the executive committee. The call for the convention, signed by Carl D. Jackson of Wisconsin, president of the association; James B. Walker of New York, secretary, and H. G. Taylor, of Nebraska, chairman of the executive committee, says that the tendency of the federal government to encroach on the powers of the states must be checked, and every state is earnestly urged to send as many delegates as possible.

Chairman C. C. McChord of the Interstate Commerce Commission will address the convention on Tuesday afternoon and will tell what has been done and what is proposed in the direction of co-operation between the federal commission and state commissions. Possible changes in the Transportation Act will be discussed by W. H. Newton of Minnesota and H. G. Taylor of Nebraska.

On Wednesday morning, the regulation of telephones will be discussed and on Thursday morning other public utilities will be the subject with addresses by executives of the different interests, who have been invited by the association. These addresses will deal with gas, electric light and power.

Hon. E. V. Kuykendall, of Washington, will present the report of the new standing committee on Motor Vehicle Transportation. Washington is one of the states which has taken the lead in regulating motor vehicles. Reports are expected from all of the standing committees.

The address of Secretary James B. Walker is 49 Lafayette street, New York City.

## A Committee on Public Relations

The Long Island Railroad announces the appointment of a Committee on Public Relations, which, in the words of President Ralph Peters, has been established for the purpose of opening up as many channels as possible between the management of the road and the people patronizing it, with the end in view that patrons may have a closer idea of the company's problems and the officers have a closer idea of the problems of the people. In addressing the members of the committee at their first meeting, Mr. Peters said:

"The road must expand its activities and keep its patrons better informed about railroad problems. Public opinion may be depended upon to be actuated by justice and good sense if the people are well informed. Employees need a liberal education; they need information that will give them courage to speak for the company. The committee is expected to supply officers and employees with the facts which will enable them to speak authoritatively and clearly, not only on matters pertaining to the Long Island road but as well on railroad problems generally."

In the "creed" which has been prepared for the committee we read: "Any employee can do *as* told; *all* employees will do *when* told; but the most valuable employee is the one who gives off-duty thought to the problems with which he has to deal." Announcement has been made that a member of the committee or a representative will attend meetings held in any town on Long Island to discuss all matters affecting train service, civic improvements and general railroad subjects. Chambers of Commerce, Boards of Trade and other organizations can make special arrangements by addressing the Chairman, P. H. Woodward (general passenger agent), Pennsylvania Station, New York City. Other members of the committee are C. D. Baker, general superintendent; J. F. Keany, general solicitor; C. L. Addison, assistant to the president; Donald Wilson, general freight agent and George Flatow, Publicity Agent.

## REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1922

| Name of road. | | Average mileage operated during period. | Operating revenues | | | Operating expenses | | | | | | Net from railway operations. | Operating income (or loss). | Net after rentals. | Net after rentals 1921. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Freight. | Passenger. | Total (inc. misc.) | Maintenance of Way and structures. | Maintenance of Equipment. | Traffic. | Transportation. | General. | Total. | Operating ratio. | | | | |
| Akron, Cantoff & Youngstown | July | 170 | $174,819 | $1,222 | $183,942 | $26,317 | $20,258 | $6,241 | $53,983 | $8,091 | $114,890 | 62.50 | $69,052 | $58,052 | $25,545 | $50,887 |
| | 7 mos. | 170 | 1,193,149 | 9,444 | 1,255,556 | 134,117 | 131,482 | 40,295 | 338,250 | 60,642 | 704,373 | 56.10 | 551,183 | 482,096 | 296,112 | 49,758 |
| Alabama & Vicksburg | July | 141 | 108,047 | 67,630 | 193,048 | 45,431 | 21,834 | 8,725 | 93,609 | 11,990 | 183,577 | 95.10 | 9,471 | —6,947 | 2,021 | 24,872 |
| | 7 mos | 141 | 1,248,975 | 396,684 | 1,768,138 | 322,455 | 334,225 | 62,426 | 662,320 | 83,095 | 1,477,501 | 83.60 | 290,637 | 149,557 | 177,916 | —92,750 |
| Vicksburg, Shreveport & Pac. | July | 171 | 138,787 | 95,912 | 256,073 | 54,159 | 30,328 | 9,616 | 113,452 | 16,929 | 226,777 | 88.60 | 29,296 | 11,947 | 6,975 | 60,637 |
| | 7 mos. | 171 | 1,353,270 | 635,281 | 2,137,389 | 406,848 | 330,785 | 72,227 | 834,650 | 97,235 | 1,757,192 | 82.20 | 380,197 | 243,559 | 188,356 | 115,879 |
| Ann Arbor | July | 293 | 333,241 | 51,412 | 410,579 | 59,093 | 79,435 | 10,564 | 193,694 | 18,768 | 361,581 | 88.10 | 48,998 | 26,453 | 10,873 | 43,245 |
| | 7 mos. | 293 | 2,406,015 | 299,588 | 2,823,654 | 346,387 | 488,220 | 66,969 | 1,257,406 | 103,741 | 2,262,818 | 80.10 | 560,836 | 412,166 | 266,255 | 56,076 |
| Atchison, Topeka & Santa Fe | July | 8,855 | 10,514,515 | 4,105,254 | 15,767,202 | 2,851,622 | 2,532,753 | 253,232 | 4,638,927 | 336,890 | 10,562,083 | 67.00 | 5,205,119 | 4,213,204 | 4,370,320 | 6,010,029 |
| | 7 mos. | 8,856 | 65,993,495 | 24,796,982 | 99,169,530 | 17,726,443 | 23,268,684 | 1,826,012 | 31,940,208 | 2,342,969 | 77,002,077 | 77.60 | 22,167,453 | 14,969,694 | 15,893,110 | 21,051,305 |
| Gulf, Colorado & Santa Fe | July | 1,907 | 1,411,826 | 401,920 | 1,943,272 | 303,828 | 302,277 | 41,671 | 581,477 | 62,965 | 1,291,126 | 66.40 | 652,146 | 568,588 | 508,201 | 1,112,327 |
| | 7 mos. | 1,907 | 8,824,463 | 2,241,038 | 11,937,548 | 2,699,796 | 2,996,429 | 293,753 | 4,070,737 | 472,269 | 10,527,510 | 88.20 | 1,410,038 | 929,398 | 482,069 | —2,894,234 |
| Panhandle & Santa Fe | July | 857 | 456,342 | 136,647 | 642,122 | 164,593 | 139,670 | 7,079 | 206,998 | 17,545 | 535,456 | 83.40 | 106,666 | 83,731 | 55,498 | 353,556 |
| | 7 mos. | 857 | 3,056,940 | 780,657 | 4,113,128 | 1,093,166 | 1,283,773 | 48,371 | 1,398,134 | 130,881 | 3,947,448 | 96.00 | 165,680 | 5,317 | —210,667 | 548,673 |
| Atlanta & West Point | July | 93 | 103,561 | 77,946 | 207,431 | 32,397 | 42,170 | 8,798 | 75,852 | 9,905 | 172,219 | 83.00 | 35,212 | 22,860 | 17,427 | 18,146 |
| | 7 mos. | 93 | 679,307 | 487,096 | 1,354,663 | 173,482 | 291,061 | 54,603 | 528,467 | 71,673 | 1,146,012 | 84.60 | 208,651 | 135,009 | 85,956 | 39,173 |
| Western of Alabama | July | 133 | 120,517 | 72,986 | 216,665 | 30,469 | 32,964 | 9,022 | 70,937 | 9,963 | 156,058 | 72.00 | 60,607 | 44,795 | 45,297 | 27,495 |
| | 7 mos. | 133 | 803,989 | 444,209 | 1,411,397 | 179,254 | 311,819 | 59,319 | 469,669 | 75,178 | 1,118,013 | 79.20 | 293,384 | 223,342 | 225,631 | 82,837 |
| Atlanta, Birmingham & Atlantic | July | 639 | 242,853 | 53,508 | 323,061 | 58,581 | 80,962 | 21,546 | 161,574 | 17,318 | 340,046 | 105.25 | —16,985 | —30,995 | —43,420 | —143,464 |
| | 7 mos. | 639 | 1,740,166 | 245,280 | 2,165,907 | 409,584 | 612,733 | 148,641 | 1,110,516 | 112,363 | 2,394,451 | 110.55 | —228,544 | —331,698 | —418,326 | —1,164,282 |
| Atlantic Coast Line | July | 4,922 | 2,956,044 | 1,125,462 | 4,494,338 | 695,797 | 874,127 | 110,778 | 1,901,153 | 147,252 | 3,748,654 | 83.40 | 745,684 | 468,749 | 538,405 | —51,981 |
| | 7 mos. | 4,922 | 28,661,535 | 9,583,281 | 41,589,918 | 4,793,537 | 7,925,444 | 753,287 | 14,989,103 | 973,255 | 29,666,171 | —71.30 | 11,923,747 | 10,033,583 | 9,383,759 | 3,118,377 |
| Charleston & Western Carol | July | 342 | 183,914 | 41,285 | 238,807 | 39,056 | 39,660 | 6,278 | 100,512 | 6,443 | 191,949 | 80.40 | 46,858 | 35,857 | 29,028 | —7,658 |
| | 7 mos. | 342 | 1,604,494 | 257,837 | 1,963,283 | 312,656 | 263,480 | 46,404 | 791,534 | 45,223 | 1,439,297 | 74.30 | 503,986 | 426,362 | 364,278 | —209,808 |
| Baltimore & Ohio | July | 5,235 | 10,350,382 | 2,310,138 | 13,944,023 | 1,900,361 | 2,295,630 | 297,558 | 6,483,637 | 447,833 | 11,545,768 | 82.80 | 2,398,255 | 1,663,646 | 1,225,067 | 2,026,782 |
| | 7 mos. | 5,235 | 89,676,196 | 15,220,346 | 112,623,182 | 13,604,630 | 24,673,525 | 2,082,748 | 44,544,502 | 3,315,541 | 89,244,692 | 79.20 | 23,378,490 | 18,360,922 | 15,805,362 | 9,657,246 |
| Balti. & Ohio Chic. Term | July | 91 | ..... | ..... | 246,065 | 27,929 | 17,190 | 1,860 | 138,492 | 11,049 | 202,300 | 72.20 | 43,755 | —7,633 | 108,057 | 70,433 |
| | 7 mos. | 91 | ..... | ..... | 1,723,489 | 249,072 | 204,894 | 13,322 | 952,650 | 72,467 | 1,522,211 | 88.30 | 201,278 | —132,726 | 675,588 | 231,981 |
| Staten Isl. Rapid Transit | July | 23 | 69,029 | 147,895 | 256,842 | 49,515 | 32,958 | 1,812 | 132,096 | 13,256 | 229,637 | 89.40 | 27,205 | 9,047 | —4,753 | 5,231 |
| | 7 mos. | 23 | 545,329 | 710,388 | 1,408,650 | 350,384 | 216,970 | 13,527 | 814,718 | 95,524 | 1,491,123 | 105.90 | —82,473 | —203,177 | —298,978 | —195,112 |
| Bangor & Aroostook | July | 625 | 318,116 | 67,290 | 406,574 | 140,960 | 90,183 | 2,937 | 130,713 | 17,604 | 384,089 | 94.50 | 22,485 | —5,956 | 18,569 | —53,084 |
| | 7 mos | 625 | 4,219,804 | 516,529 | 4,894,961 | 849,097 | 854,707 | 27,632 | 1,324,579 | 136,774 | 3,109,801 | 65.40 | 1,695,160 | 1,330,286 | 1,371,694 | 302,420 |
| Belt Ry. Co. of Chicago | July | 32 | ..... | ..... | 445,914 | 38,749 | 25,021 | 2,549 | 201,172 | 9,510 | 277,001 | 62.10 | 168,913 | 135,535 | 133,155 | 134,059 |
| | 7 mos. | 32 | ..... | ..... | 3,336,640 | 316,270 | 340,664 | 14,758 | 1,463,199 | 68,976 | 2,203,867 | 66.10 | 1,132,773 | 887,112 | 962,139 | 937,768 |
| Bessemer & Lake Erie | July | 225 | 1,364,389 | 35,890 | 1,427,097 | 140,720 | 375,195 | 13,475 | 425,664 | 25,886 | 987,191 | 69.20 | 439,906 | 407,770 | 409,943 | 494,789 |
| | 7 mos. | 225 | 5,733,319 | 212,473 | 6,091,746 | 777,349 | 2,141,930 | 107,419 | 2,038,533 | 179,249 | 5,280,289 | 86.70 | 811,457 | 582,881 | 775,561 | 412,233 |
| Bingham & Garfield | July | 34 | 20,079 | 1 | 20,416 | 15,117 | 3,320 | 1,449 | 4,966 | 4,223 | 29,128 | 142.30 | —8,663 | —12,872 | 2,017 | —32,122 |
| | 7 mos. | 34 | 101,537 | 7 | 102,845 | 116,427 | 24,426 | 9,407 | 33,484 | 29,350 | 213,443 | 207.50 | —110,598 | —148,874 | —75,069 | —147,519 |
| Boston & Maine | July | 2,287 | 3,544,985 | 2,219,095 | 6,519,313 | 983,942 | 966,899 | 48,265 | 2,779,497 | 199,506 | 5,005,946 | 76.80 | 1,513,367 | 1,301,751 | 1,044,869 | —6,465 |
| | 7 mos. | 2,287 | 27,136,104 | 12,517,832 | 44,368,076 | 6,797,069 | 8,187,470 | 383,239 | 20,338,600 | 1,529,302 | 37,408,745 | 84.30 | 6,959,331 | 5,584,450 | 3,811,960 | —4,491,850 |
| Brooklyn Eastern Dist. Term | July | 9 | 114,215 | ..... | 121,905 | 6,215 | 17,857 | ..... | 47,705 | 5,229 | 77,006 | 63.20 | 44,899 | 38,207 | 38,207 | 25,356 |
| | 7 mos. | 9 | 864,854 | ..... | 919,325 | 39,415 | 130,186 | 1,294 | 346,953 | 34,275 | 552,123 | 60.10 | 367,202 | 321,939 | 321,939 | 171,793 |
| Buffalo & Susquehanna | July | 253 | 44,171 | 4,762 | 52,331 | 32,735 | 21,521 | 2,089 | 30,148 | 8,654 | 95,147 | 181.80 | —42,816 | —46,066 | —41,570 | —16,320 |
| | 7 mos. | 253 | 714,584 | 41,290 | 784,078 | 217,485 | 256,645 | 15,260 | 296,160 | 63,709 | 849,259 | 108.30 | —65,181 | —87,968 | 17,069 | —67,170 |
| Buffalo, Rochester & Pittsburg | July | 589 | 657,711 | 147,148 | 881,194 | 226,908 | 368,521 | 24,113 | 429,419 | 37,819 | 1,088,968 | 123.60 | —207,774 | —242,983 | —190,631 | 53,921 |
| | 7 mos. | 589 | 6,497,893 | 932,582 | 7,824,152 | 1,139,142 | 2,887,311 | 128,581 | 3,144,428 | 265,828 | 7,580,472 | 96.90 | 243,680 | —5,831 | 215,868 | 387,024 |
| Canadian Pacific (Lines in Me.) | July | 233 | 82,748 | 35,359 | 132,721 | 31,784 | 32,455 | 4,347 | 77,355 | 4,542 | 156,483 | 113.40 | —17,762 | —33,762 | —37,616 | —51,602 |
| | 7 mos. | 233 | 1,292,771 | 237,093 | 1,641,225 | 247,596 | 305,051 | 30,165 | 788,795 | 26,742 | 1,398,349 | 85.20 | 242,876 | 130,876 | 45,765 | —55,698 |
| Carolina, Clinchfield & Ohio | July | 295 | 565,465 | 45,641 | 624,292 | 73,389 | 72,348 | 21,433 | 159,605 | 19,084 | 345,504 | 55.30 | 278,788 | 238,757 | 321,048 | 245,968 |
| | 7 mos. | 295 | 4,139,635 | 265,690 | 4,487,547 | 520,220 | 972,105 | 163,475 | 1,111,344 | 132,511 | 2,897,065 | 64.60 | 1,590,482 | 1,309,963 | 1,827,464 | 1,208,687 |
| Central of Georgia | July | 1,920 | 1,286,868 | 476,977 | 1,935,648 | 272,661 | 342,545 | 66,236 | 757,867 | 75,569 | 1,520,458 | 78.60 | 415,190 | 315,012 | 337,387 | 261,126 |
| | 7 mos. | 1,917 | 8,594,354 | 2,871,355 | 12,683,645 | 1,694,886 | 2,418,119 | 462,595 | 4,937,877 | 522,508 | 10,080,159 | 79.50 | 2,603,486 | 1,966,322 | 2,085,224 | 358,334 |
| Central of New Jersey | July | 688 | 2,298,785 | 1,110,121 | 3,686,157 | 518,928 | 874,315 | 34,907 | 1,737,978 | 107,758 | 3,292,288 | 89.30 | 393,869 | 125,412 | 78,089 | 1,098,407 |
| | 7 mos. | 688 | 19,787,958 | 5,270,703 | 26,886,137 | 3,057,058 | 7,460,479 | 237,033 | 11,424,547 | 734,113 | 23,030,123 | 85.70 | 3,856,014 | 2,026,651 | 1,759,811 | 4,171,917 |
| Central Vermont | July | 532 | 383,024 | 103,057 | 560,874 | 119,703 | 62,179 | 12,628 | 265,009 | 19,675 | 480,774 | 85.70 | 80,100 | 62,524 | 37,710 | —108,618 |
| | 7 mos. | 532 | 2,866,467 | 673,503 | 3,952,223 | 618,493 | 675,795 | 86,081 | 2,017,262 | 168,087 | 3,576,032 | 90.50 | 376,191 | 252,283 | 58,720 | —974,175 |
| Chesapeake & Ohio | July | 2,547 | 5,094,564 | 985,581 | 6,474,773 | 913,225 | 955,417 | 83,433 | 2,367,590 | 149,520 | 4,508,532 | 69.60 | 1,966,241 | 1,697,987 | 1,690,589 | 1,534,566 |
| | 7 mos. | 2,547 | 42,368,003 | 5,897,989 | 50,647,632 | 6,016,784 | 12,206,851 | 539,975 | 17,746,845 | 1,115,576 | 37,781,924 | 74.60 | 12,865,708 | 10,986,269 | 11,335,246 | 6,575,884 |
| Chicago & Alton | July | 1,050 | 1,093,882 | 550,557 | 186,110 | 326,609 | 482,300 | 48,877 | 834,723 | 55,789 | 1,761,392 | 94.60 | 99,718 | 24,570 | —60,489 | 103,714 |
| | 7 mos. | 1,050 | 11,148,779 | 3,531,588 | 15,993,782 | 1,941,686 | 4,360,500 | 386,581 | 6,274,831 | 402,787 | 13,445,329 | 84.10 | 2,548,453 | 2,021,173 | 1,093,595 | 58,889 |
| Chicago & Eastern Illinois | July | 945 | 1,244,584 | 403,905 | 1,788,702 | 246,386 | 361,856 | 49,124 | 823,722 | 69,674 | 1,559,076 | 87.20 | 229,626 | 129,499 | 101,790 | 275,136 |
| | 7 mos. | 945 | 10,083,899 | 2,605,829 | 13,691,856 | 1,613,007 | 3,498,910 | 302,370 | 5,700,335 | 467,104 | 11,658,030 | 85.10 | 2,033,826 | 1,420,379 | 1,221,267 | —105,186 |
| Chicago & North Western | July | 8,402 | 8,449,278 | 2,816,150 | 12,680,808 | 1,745,232 | 1,358,660 | 182,073 | 5,022,946 | 307,850 | 8,681,515 | 68.50 | 3,999,293 | 3,267,840 | 3,296,288 | 1,955,965 |
| | 7 mos. | 8,402 | 54,512,834 | 17,074,068 | 80,341,437 | 10,522,558 | 15,896,565 | 1,072,964 | 35,240,864 | 2,174,558 | 65,388,984 | 81.40 | 14,952,453 | 9,824,268 | 9,627,691 | —1,611,090 |
| Chic., Burlington & Quincy | July | 9,393 | 8,590,467 | 2,826,568 | 12,608,638 | 1,783,612 | 1,891,052 | 225,803 | 5,187,402 | 360,628 | 9,503,423 | 75.40 | 3,105,215 | 2,189,920 | 1,969,740 | 3,159,256 |
| | 7 mos. | 9,393 | 63,283,350 | 15,794,271 | 87,244,590 | 11,289,002 | 17,867,096 | 1,330,097 | 32,700,411 | 2,426,540 | 66,227,317 | 75.90 | 21,017,273 | 14,575,993 | 13,628,812 | 13,831,646 |
| Chicago, Great Western | July | 1,496 | 1,373,622 | 382,102 | 1,915,134 | 439,031 | 230,792 | 62,494 | 762,202 | 53,120 | 1,561,571 | 81.50 | 353,563 | 274,806 | 136,916 | 244,596 |
| | 7 mos. | 1,496 | 9,588,160 | 2,442,039 | 13,238,278 | 2,091,717 | 3,020,870 | 452,722 | 5,714,432 | 393,734 | 11,766,908 | 88.90 | 1,471,370 | 902,873 | —11,533 | 528,743 |
| Chicago, Ind. & Louisville | July | 654 | 839,231 | 240,067 | 1,210,744 | 134,455 | 205,188 | 34,966 | 482,277 | 34,772 | 904,924 | 74.70 | 306,720 | 240,699 | 136,814 | 93,751 |
| | 7 mos. | 654 | 6,376,712 | 1,770,416 | 8,968,660 | 953,867 | 1,925,673 | 229,804 | 3,355,455 | 247,886 | 6,802,293 | 75.80 | 2,166,367 | 1,720,688 | 1,004,950 | 92,973 |

# REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1922—CONTINUED

| Name of road. | | Average mileage operated during period. | Operating revenues: Freight. | Passenger. | Total (inc. misc.) | Operating expenses: Maintenance of Way and structures. | Maintenance of Equipment. | Traffic. | Transportation. | General. | Total. | Operating ratio. | Net from railway operations. | Operating income (or loss). | Net after rentals. | Net after rentals 1921. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chicago, Milw'k & St. Paul | July | 11,030 | $8,987,051 | $2,232,604 | $12,694,329 | $1,919,243 | $1,241,753 | $189,857 | $5,443,701 | $303,955 | $9,162,348 | 72.20 | $3,531,981 | $2,693,101 | $2,334,534 | $1,021,668 |
| | 7 mos. | 11,030 | 61,102,179 | 13,638,098 | 83,851,104 | 11,155,614 | 20,663,240 | 1,303,675 | 35,870,843 | 2,280,666 | 71,707,222 | 85.50 | 12,143,882 | 6,483,526 | 3,951,689 | —1,794,056 |
| Chicago, Peoria & St. Louis | July | 246 | 144,254 | 16,719 | 173,047 | 26,324 | 11,294 | 4,478 | 93,890 | 11,267 | 147,253 | 85.10 | 25,794 | 16,264 | —17,195 | —6,765 |
| | 7 mos. | 246 | 1,091,490 | 132,494 | 1,306,232 | 210,034 | 262,718 | 30,897 | 758,415 | 75,164 | 1,337,228 | 102.40 | —30,996 | —97,623 | —265,295 | —388,860 |
| Chicago River & Indiana | July | 38 | ..... | ..... | 562,303 | 54,019 | 54,076 | 1,177 | 203,162 | 10,195 | 322,629 | 57.38 | 239,674 | 195,103 | 268,154 | ..... |
| | 7 mos. | 38 | ..... | ..... | 1,354,566 | 142,014 | 136,146 | 1,910 | 519,081 | 18,378 | 817,529 | 60.35 | 537,037 | 433,599 | 613,633 | ..... |
| Chicago, Rock Isl. & Pac | July | 7,661 | 6,907,637 | 2,374,844 | 10,030,565 | 1,215,235 | 906,514 | 193,966 | 4,262,329 | 207,654 | 6,851,712 | 68.30 | 3,178,853 | 2,633,418 | 2,236,951 | 1,811,522 |
| | 7 mos. | 7,661 | 46,109,851 | 15,015,036 | 66,084,247 | 8,455,996 | 13,568,465 | 1,256,050 | 28,110,825 | 1,605,563 | 53,296,304 | 80.70 | 12,787,943 | 9,049,896 | 7,208,077 | 6,324,946 |
| Chic., Rock Isl. & Gulf | July | 461 | 426,995 | 84,971 | 538,486 | 85,918 | 37,846 | 12,584 | 202,382 | 13,048 | 352,832 | 65.50 | 185,654 | 174,481 | 149,364 | 146,285 |
| | 7 mos. | 461 | 2,432,475 | 537,660 | 3,254,546 | 472,593 | 524,521 | 95,150 | 1,457,769 | 97,061 | 2,652,365 | 81.50 | 602,181 | 520,946 | 389,669 | 521,879 |
| Chic., St. P., Minn. & Omaha | July | 1,749 | 1,635,918 | 518,176 | 2,323,272 | 327,733 | 226,129 | 34,549 | 1,003,964 | 71,533 | 1,672,582 | 72.00 | 650,690 | 520,711 | 477,383 | 392,693 |
| | 7 mos. | 1,749 | 10,733,499 | 3,520,084 | 15,379,723 | 1,954,030 | 2,787,451 | 232,981 | 7,165,915 | 506,116 | 12,711,942 | 82.70 | 2,667,781 | 1,745,783 | 1,507,759 | —376,338 |
| Cin., Indianapolis & Western | July | 347 | 275,004 | 44,427 | 341,742 | 44,312 | 59,607 | 11,434 | 149,562 | 20,163 | 287,090 | 84.00 | 54,652 | 38,002 | 19,379 | —35,446 |
| | 7 mos. | 347 | 1,912,392 | 338,782 | 2,385,326 | 300,314 | 517,015 | 79,630 | 1,063,070 | 139,400 | 2,116,176 | 88.70 | 269,150 | 166,760 | 11,148 | —535,171 |
| Colorado & Southern | July | 1,099 | 842,652 | 234,694 | 1,177,750 | 175,714 | 135,765 | 14,195 | 391,329 | 43,597 | 771,055 | 65.50 | 406,695 | 340,330 | 295,170 | 76,694 |
| | 7 mos. | 1,099 | 5,579,964 | 1,108,688 | 7,237,716 | 957,039 | 1,515,184 | 91,861 | 2,662,231 | 312,105 | 5,591,530 | 77.30 | 1,646,186 | 1,180,021 | 976,510 | 832,741 |
| Ft. Worth & Denver City | July | 456 | 480,211 | 244,301 | 769,152 | 55,035 | 79,895 | 12,444 | 261,369 | 32,379 | 447,738 | 58.20 | 321,414 | 272,176 | 248,850 | 376,206 |
| | 7 mos. | 456 | 3,562,059 | 1,246,203 | 5,131,295 | 441,709 | 904,340 | 82,705 | 1,689,836 | 251,149 | 3,399,347 | 66.20 | 1,731,948 | 1,445,520 | 1,438,440 | 1,773,651 |
| Wichita Valley | July | 256 | 59,908 | 24,716 | 90,991 | 14,919 | 6,094 | 45 | 39,554 | 1,314 | 61,567 | 67.70 | 29,424 | 21,970 | 10,621 | 48,202 |
| | 7 mos | 256 | 461,736 | 151,215 | 662,436 | 142,735 | 53,332 | 324 | 288,025 | 10,367 | 491,390 | 74.20 | 171,046 | 129,025 | 59,236 | 151,604 |
| Columbus & Greenville | July | 167 | 105,839 | 25,304 | 135,824 | 30,652 | 3,735 | 3,520 | 42,939 | 9,672 | 90,510 | 66.60 | 45,314 | 39,814 | 27,108 | —48,850 |
| | 7 mos. | 208 | 618,905 | 187,868 | 850,482 | 193,350 | 85,425 | 23,699 | 325,592 | 60,564 | 688,577 | 81.00 | 161,905 | 128,435 | 44,165 | —386,374 |
| Delaware & Hudson | July | 887 | 1,612,428 | 375,166 | 2,220,960 | 406,484 | 470,207 | 42,178 | 1,073,016 | 148,618 | 2,175,646 | 98.00 | 45,316 | —40,963 | —57,089 | 1,088,531 |
| | 7 mos. | 887 | 17,052,850 | 1,987,878 | 21,087,392 | 3,290,205 | 5,382,499 | 304,474 | 8,702,005 | 1,036,190 | 19,072,347 | 90.40 | 2,015,045 | 1,398,950 | 1,407,064 | 3,767,572 |
| Dela., Lackawanna & Western | July | 994 | 3,405,978 | 1,371,770 | 5,549,408 | 785,747 | 1,100,325 | 116,969 | 2,494,488 | 154,872 | 4,716,393 | 85.00 | 833,015 | 455,707 | 529,420 | 1,834,618 |
| | 7 mos. | 994 | 28,480,184 | 7,805,954 | 41,432,216 | 4,719,635 | 8,730,608 | 785,960 | 17,947,540 | 1,114,267 | 33,661,940 | 81.20 | 7,770,276 | 4,830,407 | 5,255,490 | 6,497,114 |
| Denver & Rio Grande Western | July | 2,593 | 1,939,083 | 718,548 | 2,902,572 | 444,026 | 288,237 | 40,052 | 881,704 | 83,233 | 1,802,764 | 62.10 | 1,099,808 | 932,484 | 962,779 | 377,770 |
| | 7 mos. | 2,593 | 12,863,014 | 3,129,109 | 17,358,783 | 2,505,559 | 3,393,136 | 316,927 | 5,772,481 | 583,968 | 12,892,138 | 74.30 | 4,466,645 | 3,359,633 | 3,615,930 | 1,508,872 |
| Denver & Salt Lake | July | 255 | 26,229 | 12,438 | 43,758 | 62,387 | 20,673 | 901 | 20,611 | 5,859 | 110,431 | 252.40 | —66,673 | —75,692 | —75,154 | 44,213 |
| | 7 mos. | 255 | 454,297 | 97,007 | 599,581 | 275,441 | 173,451 | 6,620 | 233,268 | 42,342 | 731,124 | 121.90 | —131,543 | —194,572 | —172,374 | —143,769 |
| Detroit & Mackinac | July | 385 | 127,345 | 39,048 | 180,802 | 28,084 | 48,237 | 2,066 | 58,800 | 4,855 | 141,889 | 78.50 | 38,913 | 30,130 | 27,766 | 26,323 |
| | 7 mos. | 385 | 712,770 | 204,541 | 996,113 | 182,602 | 354,943 | 15,841 | 403,406 | 37,925 | 994,048 | 99.80 | 2,065 | —70,292 | —81,574 | —24,304 |
| Detroit & Toledo Shore Line | July | 61 | 217,591 | ..... | 220,335 | 21,699 | 24,861 | 3,084 | 64,020 | 5,918 | 119,582 | 54.30 | 100,753 | 86,753 | 39,236 | 86,346 |
| | 7 mos. | 61 | 2,010,683 | ..... | 2,029,466 | 196,276 | 149,786 | 15,575 | 549,724 | 48,984 | 960,345 | 47.30 | 1,069,121 | 971,061 | 539,507 | 174,304 |
| Detroit, Toledo & Ironton | July | 454 | 802,234 | 10,681 | 823,979 | 166,376 | 192,408 | 5,373 | 269,485 | 23,201 | 656,843 | 79.70 | 167,136 | 154,416 | —16,367 | 144,552 |
| | 7 mos. | 454 | 5,160,394 | 67,783 | 5,301,902 | 774,372 | 1,127,014 | 39,400 | 1,735,915 | 133,079 | 3,809,361 | 71.80 | 1,492,541 | 1,404,337 | 689,151 | 334,634 |
| Duluth & Iron Range | July | 281 | 1,235,534 | 17,462 | 1,339,057 | 143,993 | 81,717 | 1,142 | 255,104 | 15,090 | 497,872 | 37.20 | 841,185 | 752,994 | 756,833 | 404,959 |
| | 7 mos. | 281 | 3,129,560 | 110,454 | 3,515,606 | 615,240 | 633,977 | 8,250 | 1,045,438 | 116,010 | 2,420,049 | 68.80 | 1,095,557 | 845,586 | 860,821 | —102,665 |
| Duluth, Missabe & Northern | July | 307 | 2,521,388 | 37,134 | 2,736,716 | 212,017 | 108,648 | 3,954 | 423,824 | 18,858 | 769,227 | 28.10 | 1,967,489 | 1,763,945 | 1,762,813 | 1,203,315 |
| | 7 mos. | 306 | 5,848,205 | 269,670 | 6,581,450 | 1,098,522 | 913,071 | 22,397 | 1,628,477 | 137,790 | 3,812,490 | 57.90 | 2,768,960 | 1,965,391 | 1,948,591 | 1,131,400 |
| Duluth, South Shore & Atlantic | July | 591 | 279,934 | 104,109 | 435,227 | 56,040 | 31,027 | 6,980 | 185,747 | 11,172 | 296,799 | 68.20 | 138,428 | 105,428 | 101,927 | 2,801 |
| | 7 mos. | 591 | 1,578,318 | 583,747 | 2,400,008 | 424,946 | 436,466 | 46,594 | 1,289,222 | 80,479 | 2,314,712 | 96.40 | 85,296 | —133,974 | —156,845 | —502,090 |
| Duluth, Winnipeg & Pacific | July | 178 | 140,957 | 20,116 | 166,318 | 43,351 | 52,917 | 3,129 | 82,528 | 4,922 | 186,847 | 112.30 | —20,529 | —28,334 | —32,394 | —46,246 |
| | 7 mos. | 178 | 964,751 | 135,161 | 1,138,982 | 202,141 | 290,207 | 31,249 | 516,382 | 38,248 | 1,078,203 | 94.60 | 60,779 | —1,267 | —19,067 | —19,096 |
| Elgin, Joliet & Eastern | July | 459 | 1,494,872 | 6 | 1,732,637 | 139,463 | 87,405 | 14,691 | 661,252 | 32,888 | 934,848 | 53.90 | 797,789 | 709,456 | 582,969 | 181,380 |
| | 7 mos. | 459 | 10,943,008 | 28 | 12,239,872 | 985,172 | 2,239,928 | 86,939 | 3,762,385 | 238,976 | 7,311,744 | 59.70 | 4,928,128 | 4,316,635 | 3,460,135 | 1,506,196 |
| El Paso & Southwestern | July | 1,139 | 982,879 | 168,449 | 1,210,875 | 141,006 | 136,046 | 28,283 | 275,115 | 88,290 | 677,720 | 56.00 | 533,155 | 437,165 | 389,280 | 184,574 |
| | 7 mos. | 1,139 | 4,867,778 | 1,141,492 | 6,420,271 | 1,076,742 | 1,014,160 | 195,940 | 1,702,906 | 335,571 | 4,380,032 | 68.20 | 2,040,239 | 1,367,748 | 1,129,473 | 644,704 |
| Erie | July | 2,039 | 4,980,633 | 1,357,751 | 7,029,170 | 1,052,555 | 2,413,448 | 141,041 | 3,497,272 | 292,948 | 7,426,535 | 105.70 | —397,365 | —689,640 | —555,181 | 553,222 |
| | 7 mos. | 2,039 | 39,658,935 | 7,607,495 | 51,464,476 | 5,645,994 | 15,119,384 | 948,084 | 23,067,318 | 1,996,239 | 47,055,925 | 91.40 | 4,408,551 | 2,503,900 | 3,444,727 | 3,042,098 |
| Chicago & Erie | July | 269 | 664,191 | 79,084 | 824,559 | 115,129 | 145,308 | 19,512 | 372,726 | 34,493 | 688,223 | 83.50 | 136,336 | 81,321 | —187,152 | —580,537 |
| | 7 mos. | 269 | 5,480,730 | 391,132 | 6,317,333 | 686,564 | 960,240 | 136,887 | 2,777,843 | 240,038 | 4,803,018 | 76.00 | 1,514,315 | 1,141,010 | —780,249 | —2,766,135 |
| New Jersey & New York | July | 45 | 15,338 | 114,075 | 134,253 | 19,265 | 19,235 | 1,435 | 69,162 | 3,123 | 112,218 | 83.60 | 22,035 | 19,035 | —8,678 | —2,266 |
| | 7 mos. | 45 | 135,011 | 695,135 | 863,001 | 104,601 | 126,943 | 9,404 | 474,876 | 23,268 | 739,089 | 85.60 | 123,912 | 102,690 | —75,858 | —103,614 |
| N. Y., Susquehanna & Western | July | 135 | 227,747 | 68,865 | 333,801 | 59,350 | 45,117 | 3,634 | 214,476 | 10,592 | 333,167 | 99.80 | 634 | —24,903 | —37,716 | —51 |
| | 7 mos. | 135 | 1,582,206 | 425,111 | 2,308,850 | 321,389 | 386,986 | 25,161 | 1,333,796 | 67,735 | 2,135,193 | 92.50 | 173,657 | —3,252 | —94,943 | —45,918 |
| Florida East Coast | July | 764 | 424,748 | 189,029 | 715,519 | 168,350 | 131,044 | 8,441 | 285,393 | 31,747 | 628,409 | 87.80 | 87,110 | 24,113 | 913 | —145,468 |
| | 7 mos. | 764 | 5,151,268 | 2,596,950 | 8,780,757 | 1,192,254 | 1,313,254 | 96,337 | 2,593,774 | 190,697 | 5,467,040 | 62.30 | 3,313,717 | 2,884,811 | 2,514,101 | 1,454,614 |
| Ft. Smith & Western | July | 249 | 100,613 | 26,063 | 135,343 | 27,346 | 20,670 | 4,393 | 45,403 | 7,012 | 105,510 | 77.90 | 29,833 | 23,739 | 16,770 | —16,096 |
| | 7 mos. | 249 | 649,591 | 151,894 | 865,951 | 175,443 | 167,117 | 33,468 | 318,628 | 48,342 | 748,465 | 86.40 | 117,486 | 76,343 | 17,653 | —117,968 |
| Galveston Wharf | July | 13 | ..... | ..... | 86,561 | 40,536 | 2,276 | 781 | 19,774 | 3,117 | 81,019 | 93.60 | 5,542 | —10,321 | —9,857 | 151,816 |
| | 7 mos. | 13 | ..... | ..... | 793,415 | 385,994 | 27,865 | 5,687 | 190,702 | 24,985 | 752,402 | 94.80 | 41,013 | —78,932 | —78,383 | 605,617 |
| Georgia | July | 328 | 282,772 | 107,405 | 420,476 | 41,502 | 45,230 | 21,018 | 204,676 | 20,161 | 332,841 | 79.20 | 87,635 | 80,361 | 76,297 | 20,293 |
| | 7 mos. | 328 | 1,912,904 | 662,849 | 2,788,210 | 278,412 | 465,860 | 137,269 | 1,354,918 | 134,009 | 2,371,999 | 85.10 | 416,211 | 365,761 | 378,409 | —46,216 |
| Georgia & Florida | July | 405 | 83,903 | 14,690 | 105,919 | 17,232 | 14,443 | 7,212 | 44,453 | 6,303 | 89,857 | 84.80 | 16,062 | 9,765 | 241 | —22,187 |
| | 7 mos. | 405 | 633,560 | 84,327 | 771,023 | 119,889 | 120,551 | 57,236 | 309,780 | 44,742 | 653,694 | 83.50 | 117,329 | 73,172 | 19,897 | —171,513 |
| Grand Trunk Western | July | 347 | 1,323,160 | 215,280 | 1,622,368 | 197,465 | 289,601 | 34,846 | 484,050 | 51,054 | 1,063,248 | 65.50 | 559,120 | 485,831 | 295,204 | —68,760 |
| | 7 mos. | 347 | 7,344,105 | 1,077,661 | 8,966,001 | 844,597 | 1,932,634 | 196,421 | 3,764,124 | 351,890 | 7,133,320 | 79.60 | 1,832,681 | 1,371,788 | 25,720 | —932,080 |
| Atlantic & St. Lawrence | July | 166 | 113,046 | 44,844 | 184,171 | 84,476 | 16,331 | 3,730 | 97,101 | 10,838 | 216,130 | 117.40 | —31,959 | —48,868 | —93,438 | —156,863 |
| | 7 mos. | 166 | 1,180,950 | 240,899 | 1,549,070 | 322,842 | 236,153 | 30,922 | 879,622 | 83,123 | 1,566,813 | 101.10 | —17,743 | —136,096 | —588,525 | —760,859 |

## REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1922—CONTINUED

| Name of road. | | Average mileage operated during period. | Operating revenues: Freight. | Passenger. | Total (inc. misc.) | Operating expenses: Maintenance of Way and structures. | Maintenance of Equipment. | Traffic. | Transportation. | General. | Total. | Operating ratio. | Net from railway operations. | Operating income (or loss). | Net after rentals. | Net after rentals 1921. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chic., Det. & Can. Gr. Tr. Jct. | July | 59 | $164,851 | $11,158 | $197,112 | $7,765 | $10,366 | $4,601 | $57,741 | $3,493 | $83,965 | 42.60 | $113,147 | $99,774 | $71,763 | —$9,299 |
| | 7 mos. | 59 | 1,150,189 | 65,500 | 1,321,488 | 90,185 | 87,090 | 24,977 | 454,008 | 25,751 | 681,920 | 51.60 | 639,568 | 578,649 | 438,612 | 170,452 |
| Det. Gr. Haven & Milw'k | July | 189 | 435,916 | 44,721 | 513,194 | 50,907 | 41,786 | 11,092 | 190,579 | 16,528 | 311,199 | 60.60 | 201,995 | 198,269 | 122,811 | 77,497 |
| | 7 mos | 189 | 2,557,655 | 282,600 | 3,049,199 | 295,947 | 321,477 | 61,355 | 1,449,399 | 118,347 | 2,249,075 | 73.80 | 800,124 | 757,273 | 294,752 | —490,319 |
| Great Northern | July | 8,262 | 6,570,677 | 1,536,897 | 9,015,381 | 1,344,626 | 744,504 | 141,590 | 3,262,919 | 205,787 | 5,742,980 | 63.70 | 3,272,401 | 2,498,322 | 2,409,924 | 1,073,147 |
| | 7 mos. | 8,264 | 38,020,333 | 8,282,058 | 51,745,576 | 7,504,353 | 9,897,605 | 974,810 | 21,284,637 | 1,490,209 | 41,523,659 | 80.20 | 10,221,917 | 5,778,025 | 6,449,503 | —538,012 |
| Green Bay & Western | July | 262 | 94,209 | 14,868 | 118,420 | 25,359 | 9,854 | 2,505 | 48,637 | 2,497 | 88,852 | 75.00 | 29,568 | 21,568 | 16,812 | 7,069 |
| | 7 mos. | 262 | 626,439 | 119,254 | 805,115 | 151,053 | 122,039 | 16,929 | 302,349 | 18,736 | 611,083 | 75.90 | 194,032 | 138,032 | 107,235 | 78,864 |
| Gulf Coast Lines | July | 922 | 545,710 | 159,088 | 757,067 | 132,887 | 101,743 | 25,787 | 232,022 | 35,368 | 524,867 | 69.30 | 232,200 | 192,775 | 194,755 | 134,961 |
| | 7 mos. | 922 | 4,410,636 | 1,058,239 | 5,859,745 | 948,787 | 935,028 | 185,246 | 1,644,232 | 248,301 | 4,052,167 | 69.57 | 1,807,578 | 1,542,253 | 1,437,964 | 901,679 |
| Gulf & Ship Island | July | 307 | 189,068 | 48,681 | 252,429 | 40,511 | 32,030 | 9,110 | 80,994 | 11,745 | 174,773 | 69.20 | 77,656 | 59,089 | 58,631 | 32,316 |
| | 7 mos. | 307 | 1,315,324 | 268,884 | 1,690,213 | 303,757 | 255,765 | 54,216 | 513,661 | 81,281 | 1,211,169 | 71.70 | 479,044 | 353,263 | 318,474 | 88,488 |
| Gulf, Mobile & Northern | July | 436 | 285,791 | 33,043 | 333,352 | 54,695 | 40,590 | 15,974 | 130,703 | 14,185 | 255,333 | 76.60 | 78,019 | 60,389 | 44,202 | 5,337 |
| | 7 mos. | 436 | 2,246,646 | 240,848 | 2,592,363 | 389,107 | 414,894 | 97,620 | 890,737 | 108,753 | 1,891,906 | 73.00 | 700,457 | 579,380 | 477,017 | —65,633 |
| Hocking Valley | July | 348 | 704,690 | 90,292 | 894,179 | 120,984 | 224,694 | 12,028 | 338,153 | 30,293 | 726,104 | 81.20 | 168,075 | 81,161 | 116,769 | 227,380 |
| | 7 mos. | 348 | 6,034,080 | 581,437 | 7,244,589 | 730,015 | 1,551,241 | 83,179 | 2,451,459 | 217,658 | 5,023,149 | 69.30 | 2,221,440 | 1,588,933 | 1,655,247 | —252,984 |
| Illinois Central | July | 4,784 | 9,086,680 | 1,986,905 | 11,869,898 | 1,775,179 | 2,836,936 | 209,080 | 4,432,690 | 304,283 | 9,581,843 | 80.70 | 2,288,055 | 1,564,821 | 1,662,591 | 1,740,991 |
| | 7 mos. | 4,784 | 62,370,031 | 13,297,214 | 81,643,019 | 10,300,340 | 18,386,624 | 1,325,953 | 29,930,067 | 2,171,276 | 62,424,591 | 76.50 | 19,218,428 | 12,576,596 | 13,019,671 | 10,819,955 |
| Yazoo & Miss. Valley | July | 1,381 | 955,133 | 333,830 | 1,367,427 | 344,380 | 277,114 | 88,927 | 572,979 | 46,301 | 1,264,867 | 92.50 | 102,560 | —14,778 | —14,317 | —35,956 |
| | 7 mos. | 1,381 | 7,338,794 | 2,121,467 | 10,096,046 | 2,378,038 | 1,986,737 | 183,935 | 4,248,585 | 344,712 | 9,128,318 | 90.40 | 967,728 | 138,440 | 128,597 | 113,317 |
| International & Gr. Northern | July | 1,159 | 629,685 | 228,236 | 949,357 | 175,529 | 106,842 | 26,628 | 472,754 | 44,121 | 831,052 | 87.50 | 118,305 | 83,963 | 69,299 | 95,869 |
| | 7 mos. | 1,159 | 5,421,618 | 1,409,490 | 7,691,026 | 1,112,422 | 1,417,763 | 185,582 | 3,406,747 | 332,238 | 6,495,750 | 85.30 | 1,195,276 | 957,547 | 609,741 | —328,091 |
| Kans. City, Mexico & Orient | July | 272 | 94,242 | 10,477 | 112,810 | 29,038 | 10,720 | 4,994 | 62,161 | 5,841 | 112,754 | 100.00 | 56 | —8,264 | —10,500 | —1,477 |
| | 7 mos. | 272 | 647,675 | 72,657 | 778,123 | 179,114 | 185,147 | 33,058 | 427,081 | 45,540 | 869,940 | 111.80 | —91,817 | —150,083 | —149,652 | —266,087 |
| Kans. City, Mex. & Orient of Tex. | July | 465 | 99,893 | 7,704 | 113,573 | 16,224 | 9,537 | 5,044 | 57,488 | 6,116 | 94,409 | 83.10 | 19,164 | 13,164 | 175 | —11,574 |
| | 7 mos. | 465 | 727,757 | 73,320 | 853,809 | 177,448 | 245,801 | 33,221 | 521,061 | 45,628 | 1,023,159 | 119.80 | —169,350 | —211,661 | —308,488 | —484,784 |
| Kansas City Southern | July | 767 | 1,033,502 | 169,425 | 1,338,419 | 202,383 | 222,644 | 35,007 | 483,340 | 69,033 | 1,012,031 | 75.60 | 326,388 | 231,625 | 199,855 | 412,999 |
| | 7 mos. | 767 | 7,941,033 | 1,132,542 | 10,070,936 | 1,308,828 | 1,942,193 | 255,554 | 3,658,989 | 483,184 | 7,642,741 | 75.90 | 2,428,195 | 1,747,402 | 1,674,797 | 2,483,967 |
| Texarkana & Ft. Smith | July | 81 | 139,412 | 14,848 | 167,939 | 15,065 | 32,829 | 5,327 | 52,280 | 9,480 | 115,072 | 68.50 | 52,867 | 42,004 | 25,674 | 38,255 |
| | 7 mos. | 81 | 946,346 | 101,151 | 1,145,799 | 127,633 | 176,158 | 35,074 | 347,554 | 60,776 | 746,331 | 65.10 | 399,468 | 327,007 | 215,365 | 181,805 |
| Kansas, Oklahoma & Gulf | July | 314 | 189,674 | 12,719 | 212,589 | 44,626 | 13,098 | 5,478 | 88,107 | 10,347 | 161,526 | 76.00 | 51,063 | 41,484 | 25,436 | 28,634 |
| | 7 mos. | 314 | 1,407,658 | 85,536 | 1,554,203 | 304,676 | 163,237 | 38,541 | 573,543 | 69,608 | 1,150,681 | 74.00 | 403,522 | 334,062 | 252,853 | —90,788 |
| Lake Superior & Ishpeming | July | 33 | 190,296 | 49 | 228,659 | 19,546 | 6,906 | 240 | 36,520 | 2,526 | 65,738 | 28.70 | 162,921 | 156,244 | 158,461 | —12,105 |
| | 7 mos. | 33 | 398,729 | 521 | 476,340 | 137,442 | 65,203 | 1,497 | 112,258 | 18,155 | 334,555 | 70.20 | 141,785 | 101,971 | 105,567 | —275,684 |
| Lake Terminal | July | 13 | ..... | ..... | 78,760 | 8,101 | 8,503 | ..... | 42,679 | 1,538 | 60,821 | 77.20 | 17,939 | 13,702 | 14,891 | 22,619 |
| | 7 mos. | 13 | ..... | ..... | 630,319 | 66,363 | 66,215 | ..... | 287,796 | 11,142 | 431,516 | 68.50 | 198,803 | 156,547 | 216,932 | 35,719 |
| Lehigh & Hudson River | July | 96 | 135,936 | 3,712 | 150,057 | 23,164 | 25,560 | 1,459 | 68,201 | 8,264 | 126,648 | 84.40 | 23,409 | 8,571 | —6,013 | 64,101 |
| | 7 mos. | 96 | 1,253,153 | 25,737 | 1,350,293 | 191,826 | 248,119 | 10,386 | 562,994 | 53,367 | 1,066,647 | 79.00 | 283,646 | 189,440 | 66,045 | 249,998 |
| Lehigh & New England | July | 235 | 222,796 | 1,652 | 230,268 | 82,464 | 18,863 | 24,253 | 104,644 | 15,879 | 245,684 | 106.70 | —15,416 | —22,061 | —12,376 | 86,807 |
| | 7 mos. | 236 | 2,152,206 | 13,543 | 2,217,633 | 341,234 | 761,279 | 71,841 | 819,628 | 115,656 | 2,108,992 | 95.10 | 108,641 | 39,125 | 122,888 | 503,487 |
| Lehigh Valley | July | 1,334 | 3,380,721 | 707,394 | 4,452,269 | 620,812 | 1,023,880 | 112,916 | 2,278,249 | 133,608 | 4,185,775 | 94.00 | 266,494 | 76,524 | 20,866 | 760,439 |
| | 7 mos. | 1,334 | 28,941,396 | 3,873,125 | 35,393,490 | 3,909,438 | 10,009,202 | 737,561 | 16,223,505 | 960,074 | 32,000,295 | 90.40 | 3,393,195 | 1,959,544 | 1,657,706 | 84,092 |
| Los Angeles & Salt Lake | July | 1,137 | 1,016,052 | 467,843 | 1,635,502 | 307,122 | 261,835 | 58,625 | 504,981 | 45,687 | 1,231,480 | 75.30 | 404,022 | 291,816 | 257,827 | 45,977 |
| | 7 mos. | 1,141 | 7,110,552 | 2,981,197 | 11,085,506 | 2,355,757 | 2,361,275 | 336,903 | 3,651,202 | 300,793 | 9,320,708 | 84.10 | 1,764,798 | 991,108 | 708,324 | 768,772 |
| Louisiana & Arkansas | July | 302 | 248,453 | 36,123 | 292,921 | 67,997 | 12,960 | 9,217 | 84,338 | 7,706 | 181,771 | 62.10 | 111,150 | 91,718 | 90,259 | 2,931 |
| | 7 mos. | 302 | 1,644,514 | 231,963 | 1,926,205 | 376,301 | 292,413 | 54,114 | 597,605 | 57,445 | 1,373,995 | 71.30 | 552,210 | 416,480 | 402,335 | 111,617 |
| Louisiana Ry. & Nav. Co. | July | 343 | 220,024 | 32,736 | 266,999 | 53,146 | 12,414 | 11,639 | 104,003 | 12,304 | 193,431 | 72.40 | 73,568 | 57,482 | 34,256 | 60,324 |
| | 7 mos. | 343 | 1,570,508 | 207,892 | 1,874,990 | 435,029 | 298,275 | 73,811 | 768,585 | 82,801 | 1,657,675 | 88.40 | 217,315 | 102,976 | —65,521 | 73,123 |
| Louisville & Nashville | July | 5,038 | 6,864,206 | 2,042,273 | 9,576,857 | 1,298,617 | 2,525,199 | 210,170 | 3,624,810 | 213,435 | 7,914,462 | 82.60 | 1,662,395 | 1,259,216 | 1,312,463 | 869,369 |
| | 7 mos. | 5,038 | 54,612,222 | 12,612,198 | 71,626,982 | 10,110,361 | 17,337,840 | 1,465,807 | 26,949,844 | 1,615,700 | 57,769,930 | 80.70 | 13,857,052 | 11,071,140 | 11,151,909 | —1,719,844 |
| Louisville, Henderson & St. Louis | July | 199 | 193,364 | 63,016 | 276,139 | 45,170 | 15,487 | 5,791 | 97,228 | 7,940 | 171,616 | 62.10 | 104,523 | 81,793 | 59,635 | 18,633 |
| | 7 mos. | 199 | 1,289,370 | 403,450 | 1,807,527 | 355,144 | 256,575 | 43,108 | 618,087 | 58,316 | 1,331,230 | 73.60 | 476,297 | 401,024 | 299,263 | 89,815 |
| Maine Central | July | 1,194 | 1,003,155 | 485,503 | 1,626,151 | 277,019 | 181,687 | 17,129 | 704,379 | 44,472 | 1,233,917 | 75.90 | 392,234 | 304,560 | 335,417 | 5,791 |
| | 7 mos. | 1,194 | 8,327,630 | 2,549,968 | 11,752,876 | 1,884,690 | 2,300,890 | 94,173 | 5,134,098 | 326,370 | 9,755,465 | 83.00 | 1,997,411 | 1,313,867 | 1,309,296 | —775,880 |
| Midland Valley | July | 383 | 272,376 | 72,760 | 367,041 | 57,889 | 45,000 | 5,362 | 113,405 | 15,452 | 236,621 | 64.50 | 130,420 | 113,520 | 95,768 | 70,704 |
| | 7 mos. | 383 | 2,054,668 | 481,669 | 2,648,940 | 372,659 | 313,871 | 33,731 | 784,337 | 103,428 | 1,599,514 | 60.40 | 1,049,426 | 950,868 | 880,038 | 328,640 |
| Minneapolis & St. Louis | July | 1,649 | 961,098 | 147,936 | 1,190,174 | 166,621 | 88,575 | 22,436 | 542,963 | 38,401 | 858,918 | 72.20 | 331,256 | 257,892 | 195,258 | —129,552 |
| | 7 mos. | 1,649 | 7,110,327 | 1,073,168 | 8,660,092 | 1,236,380 | 1,613,039 | 168,807 | 4,055,450 | 281,868 | 7,353,923 | 84.90 | 1,306,169 | 849,487 | 447,842 | —813,205 |
| Minn., St. Paul & S. S. Marie | July | 4,383 | 3,063,610 | 792,269 | 4,262,422 | 565,910 | 274,680 | 58,896 | 1,426,877 | 101,076 | 2,447,529 | 57.40 | 1,814,893 | 1,563,406 | 1,527,363 | 325,614 |
| | 7 mos. | 4,383 | 17,203,008 | 4,024,589 | 23,517,350 | 3,645,441 | 4,193,326 | 413,448 | 10,454,479 | 727,518 | 19,484,131 | 82.90 | 4,033,219 | 2,255,358 | 2,037,685 | —2,560,985 |
| Mississippi Central | July | 258 | 83,031 | 19,313 | 107,121 | 22,739 | 13,375 | 6,184 | 42,260 | 7,411 | 91,969 | 85.80 | 15,152 | 9,092 | 18,683 | —32,985 |
| | 7 mos. | 259 | 702,058 | 112,177 | 846,862 | 129,218 | 225,440 | 39,581 | 287,822 | 49,107 | 731,168 | 86.30 | 115,694 | 71,962 | 73,431 | —94,401 |
| Missouri, Kansas & Texas | July | 1,670 | 1,842,513 | 464,886 | 2,590,094 | 298,386 | 366,688 | 37,396 | 791,822 | 86,084 | 1,589,199 | 61.40 | 1,000,895 | 802,487 | 880,714 | 743,706 |
| | 7 mos. | 1,670 | 12,361,095 | 3,280,384 | 17,289,059 | 1,800,187 | 3,288,541 | 319,130 | 5,034,597 | 646,837 | 11,139,262 | 64.40 | 6,149,797 | 4,919,644 | 5,296,303 | 2,883,641 |
| Mo., Kans. & Tex. of Tex. | July | 1,737 | 988,416 | 407,500 | 1,567,979 | 326,624 | 159,157 | 35,386 | 665,287 | 65,064 | 1,209,815 | 77.20 | 358,164 | 305,954 | 140,062 | 588,152 |
| | 7 mos. | 1,737 | 7,549,501 | 2,950,773 | 11,576,829 | 1,834,745 | 1,552,350 | 286,189 | 4,637,299 | 544,560 | 8,834,212 | 76.30 | 2,742,617 | 2,378,800 | 1,195,218 | 1,099,455 |
| Wichita Falls & Northwestern | July | 329 | 97,486 | 25,828 | 136,052 | 30,423 | 13,013 | 745 | 51,586 | 6,617 | 102,232 | 75.10 | 33,820 | 22,960 | 3,487 | 164,367 |
| | 7 mos. | 329 | 596,180 | 156,602 | 819,734 | 189,736 | 132,643 | 6,396 | 365,225 | 62,287 | 754,036 | 92.00 | 65,698 | —18,299 | —131,679 | 178,109 |
| Missouri Pacific | July | 7,342 | 5,552,368 | 1,542,215 | 7,763,726 | 1,497,294 | 901,143 | 178,954 | 3,193,188 | 247,555 | 6,036,964 | 77.80 | 1,726,762 | 1,367,661 | 1,064,652 | 798,175 |
| | 7 mos. | 7,330 | 41,755,504 | 9,601,472 | 56,288,162 | 9,846,835 | 11,574,725 | 1,092,439 | 22,641,336 | 1,840,187 | 47,173,485 | 83.80 | 9,114,677 | 6,496,831 | 4,444,900 | 2,869,694 |

## REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1922—CONTINUED

| Name of road. | | Average mileage operated during period. | Operating revenues: Freight. | Passenger. | Total (inc. misc.) | Operating expenses: Maintenance of: Way and structures. | Equipment. | Traffic. | Transportation. | General. | Total. | Operating ratio. | Net from railway operations. | Operating income (or loss). | Net after rentals. | Net after rentals 1921. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mobile & Ohio | July | 1,165 | $1,110,122 | $150,461 | $1,330,495 | $156,022 | $257,012 | $43,242 | $523,560 | $45,547 | $1,025,940 | 77.11 | $304,555 | $250,493 | $187,369 | —$21,651 |
| | 7 mos. | 1,165 | 8,385,503 | 968,110 | 9,853,369 | 1,206,672 | 1,958,989 | 316,489 | 3,791,540 | 336,712 | 7,617,868 | 77.30 | 2,235,501 | 1,834,922 | 1,457,019 | 230,670 |
| Monongahela | July | 106 | 106,343 | 26,550 | 136,204 | 32,498 | 27,684 | 2,497 | 51,619 | 9,846 | 124,144 | 91.10 | 12,060 | 3,896 | —26,877 | 44,104 |
| | 7 mos. | 106 | 1,636,745 | 200,860 | 1,867,168 | 267,401 | 290,679 | 10,675 | 502,920 | 66,277 | 1,137,952 | 60.90 | 729,216 | 673,052 | 414,352 | —28,419 |
| Monongahela Connecting | July | 7 | ..... | ..... | 132,817 | 19,315 | 28,032 | 505 | 72,230 | 5,079 | 124,961 | 94.09 | 7,856 | 5,554 | —392 | —9,050 |
| | 7 mos. | 7 | ..... | ..... | 965,802 | 109,132 | 160,729 | 3,719 | 417,263 | 51,712 | 742,555 | 76.88 | 223,247 | 207,874 | 192,998 | —74,871 |
| Montour | July | 56 | 15,038 | 593 | 16,932 | 20,319 | 16,393 | 933 | 10,936 | 6,153 | 54,734 | 323.30 | —37,802 | —40,156 | —38,487 | —22,360 |
| | 7 mos. | 56 | 352,752 | 5,196 | 364,938 | 112,994 | 175,427 | 6,889 | 123,772 | 43,262 | 462,344 | 126.70 | —97,406 | —114,885 | —43,951 | —141,427 |
| Nashville, Chatt. & St. Louis | July | 1,258 | 1,303,167 | 423,443 | 1,844,764 | 295,635 | 372,481 | 61,589 | 720,769 | 58,812 | 1,511,229 | 81.90 | —333,535 | 297,945 | 360,578 | 431,550 |
| | 7 mos. | 1,258 | 8,494,290 | 2,620,332 | 11,988,200 | 1,935,638 | 3,126,950 | 482,818 | 4,674,832 | 404,482 | 10,657,324 | 88.90 | 1,330,876 | 1,072,584 | 1,352,658 | 69,288 |
| Nevada Northern | July | 165 | 53,901 | 5,699 | 62,641 | 10,203 | 6,165 | 392 | 9,950 | 4,097 | 30,807 | 49.20 | 31,834 | 25,717 | 25,023 | —13,063 |
| | 7 mos. | 165 | 191,309 | 28,592 | 248,791 | 63,007 | 24,527 | 3,041 | 54,097 | 20,848 | 166,020 | 66.70 | 82,771 | 39,960 | 58,046 | —79,539 |
| Newburgh & South Shore | July | 7 | ..... | ..... | 147,837 | 8,961 | 35,561 | ..... | 71,434 | 3,424 | 119,380 | 80.70 | 28,457 | 13,204 | 2,495 | 2,759 |
| | 7 mos. | 7 | ..... | ..... | 1,145,333 | 66,561 | 241,211 | ..... | 448,005 | 24,981 | 780,758 | 68.20 | 364,575 | 274,898 | 245,366 | 14,685 |
| New Orleans Great Northern | July | 274 | 163,074 | 47,287 | 218,620 | 26,426 | 21,192 | 5,960 | 64,173 | 9,731 | 127,123 | 58.10 | 91,497 | 76,137 | 72,662 | —7,804 |
| | 7 mos. | 274 | 1,171,707 | 254,322 | 1,486,069 | 226,929 | 231,731 | 35,894 | 466,875 | 70,969 | 1,034,630 | 69.60 | 451,439 | 345,697 | 301,906 | 72,825 |
| New York Central | July | 6,098 | 15,669,030 | 8,840,232 | 27,934,312 | 3,205,047 | 7,093,516 | 323,731 | 10,703,180 | 725,298 | 22,428,328 | 80.20 | 5,505,984 | 3,836,596 | 3,922,960 | 4,874,752 |
| | 7 mos. | 6,098 | 113,319,580 | 50,452,297 | 186,492,095 | 21,538,894 | 47,061,212 | 2,194,789 | 67,631,568 | 5,350,867 | 146,069,865 | 78.30 | 40,422,230 | 28,839,545 | 30,121,805 | 22,168,049 |
| Cincinnati Northern | July | 244 | 201,583 | 17,396 | 227,505 | 58,709 | 32,652 | 5,316 | 98,368 | 9,045 | 203,896 | 89.60 | 23,609 | 11,934 | —14,757 | 64,494 |
| | 7 mos. | 244 | 1,831,328 | 105,541 | 1,977,816 | 396,690 | 344,598 | 35,468 | 667,296 | 58,498 | 1,501,219 | 75.90 | 476,597 | 361,876 | 211,134 | 233,239 |
| Cleve., Cin., Chic. & St. Louis | July | 2,411 | 4,397,218 | 1,458,378 | 6,346,848 | 806,549 | 1,164,895 | 121,606 | 2,676,727 | 180,579 | 5,006,798 | 78.90 | 1,340,050 | 1,000,845 | 798,687 | 757,014 |
| | 7 mos. | 2,411 | 34,401,368 | 9,156,760 | 47,176,486 | 5,306,947 | 8,801,560 | 780,165 | 17,605,304 | 1,199,135 | 34,038,027 | 72.20 | 13,138,459 | 10,234,686 | 9,208,462 | 3,453,217 |
| Indiana Harbor Belt | July | 119 | ..... | ..... | 790,844 | 100,554 | 88,335 | 3,715 | 264,516 | 17,885 | 475,005 | 60.10 | 315,839 | 270,630 | 190,971 | 61,633 |
| | 7 mos. | 119 | ..... | ..... | 5,429,666 | 659,163 | 507,671 | 27,481 | 2,121,552 | 134,494 | 3,450,361 | 63.60 | 1,979,305 | 1,706,995 | 1,186,152 | —26,967 |
| Kanawha & Michigan | July | 176 | 170,139 | 41,407 | 224,021 | 68,102 | 77,579 | 6,117 | 97,797 | 11,164 | 260,757 | 116.40 | —36,736 | —62,622 | —61,029 | 68,266 |
| | 7 mos. | 176 | 1,384,453 | 305,880 | 1,784,563 | 431,802 | 697,024 | 31,880 | 726,191 | 76,698 | 1,963,158 | 110.00 | —178,595 | —368,516 | —301,666 | 118,515 |
| Lake Erie & Western | July | | Included in the New York, Chicago & St. Louis report. | | | | | | | | | | | | | |
| | 7 mos. | | Under contract effective July 1, 1922. Approved by I. C. C. in Finance Docket No. 2,471. | | | | | | | | | | | | | |
| Michigan Central | July | 1,862 | 4,140,484 | 1,973,932 | 6,716,232 | 730,689 | 1,346,099 | 103,522 | 2,374,476 | 133,919 | 4,765,713 | 71.00 | 1,950,519 | 1,509,883 | 1,394,075 | 1,514,302 |
| | 7 mos. | 1,862 | 29,434,887 | 10,402,099 | 44,153,981 | 4,729,291 | 9,383,729 | 638,868 | 15,544,396 | 998,065 | 31,762,576 | 71.90 | 12,391,405 | 9,822,979 | 9,118,561 | 6,323,766 |
| Pittsburgh & Lake Erie | July | 227 | 1,726,853 | 260,233 | 1,952,871 | 310,133 | 710,743 | 19,113 | 747,922 | 56,481 | 1,846,548 | 94.50 | 106,323 | 76,646 | 153,504 | 24,169 |
| | 7 mos. | 227 | 11,768,970 | 1,510,322 | 13,753,077 | 1,775,994 | 6,550,541 | 134,618 | 4,787,444 | 437,176 | 13,699,580 | 99.60 | 53,497 | —457,818 | 309,832 | 1,313,483 |
| Toledo & Ohio Central | July | 503 | 318,369 | 64,182 | 419,354 | 109,482 | 180,745 | 11,285 | 235,039 | 25,835 | 565,319 | 134.80 | —145,965 | —197,625 | —178,621 | 158,731 |
| | 7 mos. | 503 | 3,473,712 | 429,727 | 4,104,275 | 855,094 | 1,363,052 | 76,348 | 1,890,811 | 175,070 | 4,380,163 | 106.70 | —275,888 | —657,708 | —589,843 | 584,080 |
| New York, Chic. & St. Louis | July | 1,242 | 2,816,804 | 203,118 | 3,145,617 | 462,761 | 445,736 | 77,745 | 1,205,924 | 117,306 | 2,316,362 | 73.60 | 829,255 | 662,674 | 637,166 | 375,137 |
| | 7 mos. | 1,242 | 16,143,688 | 758,428 | 17,365,187 | 1,826,695 | 3,025,558 | 426,537 | 6,314,846 | 600,993 | 12,232,929 | 70.40 | 5,135,258 | 4,233,978 | 4,049,414 | 2,392,070 |
| N. Y., New Haven & Hartford | July | 1,985 | 4,877,923 | 4,526,237 | 10,476,218 | 1,620,320 | 2,288,369 | 55,923 | 4,095,406 | 292,436 | 8,472,191 | 80.90 | 2,004,027 | 1,618,152 | 1,094,321 | 485,256 |
| | 7 mos. | 1,986 | 33,289,389 | 27,439,795 | 68,323,945 | 9,383,423 | 13,770,204 | 383,522 | 27,986,860 | 2,023,197 | 54,543,507 | 89.80 | 13,780,438 | 11,075,161 | 7,989,877 | —4,251,487 |
| Central New England | July | 301 | 367,018 | 18,856 | 408,261 | 132,374 | 41,917 | 4,063 | 173,890 | 9,446 | 361,690 | 88.60 | 46,571 | 24,241 | —23,072 | 149,377 |
| | 7 mos. | 301 | 3,589,261 | 134,887 | 3,919,511 | 784,049 | 564,556 | 29,530 | 1,384,409 | 79,200 | 2,840,820 | 72.50 | 1,078,691 | 920,412 | 590,912 | 682,346 |
| New York, Ontario & Western | July | 569 | 284,378 | 673,589 | 1,161,445 | 173,213 | 104,560 | 16,873 | 490,190 | 31,081 | 815,917 | 70.30 | 345,528 | 307,508 | 271,625 | 528,461 |
| | 7 mos. | 569 | 3,873,061 | 1,709,551 | 6,752,713 | 934,299 | 1,186,716 | 105,751 | 3,232,356 | 210,627 | 5,669,749 | 84.00 | 1,082,964 | 815,951 | 511,644 | 726,063 |
| Norfolk & Western | July | 2,237 | 6,478,149 | 838,757 | 7,563,344 | 1,140,832 | 1,192,813 | 83,425 | 2,382,695 | 134,158 | 4,943,348 | 65.40 | 2,619,996 | 2,019,522 | 2,126,625 | 1,666,532 |
| | 7 mos. | 2,237 | 46,785,406 | 4,959,377 | 53,574,695 | 6,764,496 | 11,645,418 | 543,080 | 15,757,976 | 1,036,739 | 35,828,645 | 66.90 | 17,746,050 | 14,291,008 | 15,701,167 | 6,033,918 |
| Norfolk Southern | July | 930 | 485,631 | 155,935 | 672,139 | 102,344 | 107,930 | 21,653 | 273,049 | 29,538 | 535,175 | 79.60 | 136,964 | 104,532 | 94,613 | 99,685 |
| | 7 mos. | 930 | 3,786,084 | 829,862 | 4,872,364 | 714,154 | 794,088 | 153,697 | 2,039,246 | 211,855 | 3,916,051 | 80.40 | 956,313 | 743,100 | 566,118 | 261,875 |
| Northern Pacific | July | 6,631 | 5,658,181 | 1,603,650 | 7,986,391 | 1,230,523 | 1,042,413 | 168,941 | 2,825,499 | 203,799 | 5,587 399 | 70.00 | 2,398,992 | 1,672,350 | 1,874,314 | 974,889 |
| | 7 mos. | 6,647 | 36,273,001 | 9,000,559 | 49,908,495 | 7,432,426 | 12,087,563 | 997,669 | 19,627,835 | 1,522,565 | 42,296,297 | 84.80 | 7,612,198 | 2,525,602 | 4,592,553 | —860,776 |
| Northwestern Pacific | July | 496 | 370,529 | 336,454 | 794,030 | 68,849 | 76,106 | 7,731 | 276,876 | 14,817 | 445,858 | 56.20 | 348,172 | 299,014 | 281,619 | 385,340 |
| | 7 mos. | 503 | 2,240,305 | 1,552,247 | 4,351,415 | 752,111 | 504,404 | 49,457 | 1,740,207 | 102,107 | 3,157,542 | 72.60 | 1,983,873 | 864,215 | 770,592 | 825,664 |
| Pennsylvania | July | 10,290 | 32,384,628 | 12,348,131 | 49,220,147 | 7,838,172 | 11,862,920 | 597,340 | 20,040,691 | 1,338,250 | 42,556,283 | 86.50 | 6,663,864 | 3,876,392 | 3,145,433 | 4,539,189 |
| | 7 mos. | 10,290 | 231,763,758 | 79,939,977 | 341,028,437 | 41,593,619 | 87,395,122 | 3,990,026 | 128,965,298 | 9,309,015 | 276,509,097 | 81.10 | 64,519,340 | 49,959,192 | 45,085,071 | 14,801,978 |
| Balti., Chesa. & Atlantic | July | 87 | 132,074 | 68,070 | 207,466 | 14,208 | 26,674 | 3,019 | 101,995 | 3,378 | 149,274 | 71.90 | 58,192 | 46,499 | 45,759 | 64,323 |
| | 7 mos. | 87 | 604,548 | 235,407 | 874,768 | 92,202 | 260,045 | 13,275 | 508,542 | 25,731 | 899,800 | 102.90 | —25,032 | —47,573 | —45,620 | —31,728 |
| Cumberland Valley & Mont | July | 33 | 45,023 | 5,529 | 53,309 | 11,899 | 13,692 | 1,237 | 30,356 | 3,111 | 60,295 | 113.10 | —6,986 | —12,564 | —16,985 | 82,199 |
| | 7 mos. | 33 | 442,237 | 40,616 | 506,627 | 66,204 | 120,846 | 6,619 | 213,371 | 18,673 | 425,713 | 84.00 | 80,914 | 52,787 | 20,604 | 293,083 |
| Cin., Lebanon & Northern | July | 76 | 73,236 | 10,827 | 90,876 | 28,829 | 16,540 | 1,825 | 59,449 | 2,118 | 108,761 | 119.70 | —17,885 | —25,076 | —27,065 | —40,436 |
| | 7 mos. | 76 | 493,999 | 57,674 | 609,987 | 116,160 | 113,032 | 12,335 | 388,986 | 15,943 | 646,456 | 106.00 | —36,469 | —84,653 | —76,574 | —199,615 |
| Grand Rapids & Ind. | July | | Included in Pennsylvania. | | | | | | | | | | | | | |
| | 7 mos. | ... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Long Island | July | 398 | 625,253 | 2,474,686 | 3,365,343 | 248,168 | 295,462 | 23,885 | 1,233,550 | 53,437 | 1,881,125 | 55.90 | 1,484,218 | 1,190,045 | 1,133,378 | 1,034,751 |
| | 7 mos. | 398 | 4,950,615 | 10,847,018 | 17,329,772 | 1,861,726 | 2,796,002 | 122,054 | 7,545,617 | 399,120 | 12,858,440 | 74.20 | 4,471,332 | 3,574,565 | 3,114,401 | 964,312 |
| Md., Dela. & Virginia | July | 82 | 79,962 | 56,086 | 139,242 | 12,607 | 22,760 | 2,504 | 81,788 | 2,259 | 121,918 | 87.60 | 17,324 | 11,969 | 10,411 | —1,133 |
| | 7 mos. | 82 | 433,259 | 167,472 | 622,742 | 64,653 | 144,497 | 9,454 | 421,259 | 16,866 | 706,729 | 113.50 | —83,987 | —94,396 | —103,561 | —75,405 |

## REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1922—CONTINUED

| Name of road. | | Average mileage operated during period. | Operating revenues: Freight. | Passenger. | Total (inc. misc.) | Operating expenses: Maintenance of Way and structures. | Maintenance of Equipment. | Traffic. | Transportation. | General. | Total. | Operating ratio. | Net from railway operations. | Operating income (or loss). | Net after rentals. | Net after rentals 1921. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N. Y., Phila. & Norfolk | July | 122 | $709,031 | $101,349 | $864,883 | $58,943 | $177,230 | $7,525 | $357,020 | $13,806 | $613,702 | 72.10 | $241,181 | $209,251 | $165,397 | —$16,445 |
| | 7 mos. | 122 | 3,466,756 | 540,433 | 4,348,268 | 399,680 | 1,114,169 | 52,926 | 2,130,822 | 96,707 | 3,855,160 | 88.70 | 493,108 | 369,340 | 218,911 | —525,471 |
| Pitts., Cin., Chicago & St. Louis | July | Included in Pennsylvania. | | | | | | | | | | | | | | |
| | 7 mos. | ... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| West Jersey & Seashore | July | 359 | 454,093 | 1,125,909 | 1,695,476 | 181,924 | 202,018 | 16,856 | 638,066 | 27,537 | 1,080,005 | 63.70 | 615,471 | 410,581 | 376,434 | 505,193 |
| | 7 mos. | 359 | 2,681,348 | 4,141,023 | 7,421,416 | 1,108,886 | 1,405,703 | 106,405 | 3,416,591 | 183,787 | 6,303,133 | 84.90 | 1,118,283 | 718,589 | 587,141 | 39,203 |
| Peoria & Pekin Union | July | 19 | 9,623 | 3,273 | 126,576 | 14,423 | 6,233 | 413 | 64,556 | 8,571 | 94,196 | 74.42 | 32,380 | 17,380 | 44,198 | 26,545 |
| | 7 mos. | 19 | 84,214 | 26,091 | 1,017,630 | 180,029 | 108,481 | 1,498 | 431,573 | 63,398 | 784,979 | 77.14 | 232,651 | 131,151 | 295,966 | 60,629 |
| Pere Marquette | July | 2,212 | 2,147,410 | 548,212 | 3,019,982 | 408,353 | 642,441 | 54,771 | 1,075,195 | 99,588 | 2,283,680 | 75.60 | 736,302 | 591,891 | 527,563 | 845,211 |
| | 7 mos. | 2,219 | 16,408,719 | 2,876,442 | 21,227,958 | 2,466,411 | 4,381,115 | 367,270 | 8,202,331 | 730,807 | 16,198,692 | 76.30 | 5,029,266 | 4,003,149 | 3,154,247 | 2,409,677 |
| Philadelphia & Reading | July | 1,127 | 3,934,131 | 847,149 | 5,158,369 | 714,073 | 1,641,064 | 66,183 | 2,296,883 | 148,494 | 4,872,867 | 94.50 | 285,502 | 74,125 | —192,512 | 1,203,077 |
| | 7 mos. | 1,127 | 35,491,190 | 5,594,044 | 43,418,488 | 5,225,546 | 11,995,446 | 432,231 | 16,211,019 | 1,038,591 | 34,935,001 | 80.50 | 8,483,487 | 7,044,573 | 5,390,276 | 3,901,337 |
| Atlantic City | July | 176 | 132,949 | 555,023 | 703,465 | 66,438 | 49,105 | 16,869 | 313,643 | 4,415 | 450,303 | 64.00 | 253,162 | 233,504 | 166,482 | 266,262 |
| | 7 mos. | 176 | 850,109 | 1,662,857 | 2,578,434 | 418,348 | 224,242 | 47,229 | 1,444,730 | 34,195 | 2,167,453 | 84.10 | 410,981 | 270,153 | 33,999 | —56,953 |
| Perkiomen | July | 41 | 119,456 | 11,841 | 132,493 | 8,679 | 4,463 | 106 | 46,942 | 1,257 | 61,471 | 46.40 | 71,022 | 66,151 | 57,341 | 37,680 |
| | 7 mos. | 41 | 637,183 | 56,183 | 717,951 | 50,992 | 29,792 | 755 | 311,768 | 6,609 | 400,172 | 55.70 | 317,779 | 280,528 | 237,714 | 319,924 |
| Port Reading | July | 21 | 56,951 | ..... | 78,049 | 20,263 | 52,647 | 229 | 37,727 | 2,994 | 113,860 | 145.90 | —35,811 | —50,564 | —75,020 | —27,570 |
| | 7 mos. | 21 | 739,482 | ..... | 1,076,889 | 139,077 | 100,325 | 1,603 | 371,007 | 13,434 | 625,444 | 58.10 | 451,445 | 347,392 | —7,769 | 94,811 |
| Pittsburg & Shawmut | July | 102 | 44,758 | 3,323 | 49,323 | 26,936 | 20,749 | 2,378 | 20,292 | 6,455 | 76,810 | 155.70 | —27,487 | —35,260 | —21,528 | —2,363 |
| | 7 mos. | 102 | 512,467 | 37,012 | 559,390 | 183,528 | 248,678 | 11,448 | 193,408 | 48,600 | 685,662 | 122.60 | —126,272 | —134,792 | —58,393 | 65,172 |
| Pittsburg & West Virginia | July | 85 | 177,061 | 7,434 | 212,790 | 44,676 | 32,881 | 4,053 | 51,600 | 16,200 | 158,784 | 74.60 | 54,006 | 26,437 | 51,149 | —197,128 |
| | 7 mos. | 85 | 1,330,252 | 61,571 | 1,603,933 | 208,609 | 434,821 | 25,147 | 381,713 | 110,830 | 1,221,904 | 76.20 | 382,029 | 198,549 | 429,919 | —133,022 |
| Pittsburg, Shawmut & Northern | July | 210 | 52,521 | 5,039 | 61,140 | 27,469 | 66,857 | 1,131 | 31,726 | 5,416 | 132,606 | 216.90 | —71,466 | —73,676 | —77,622 | —19,872 |
| | 7 mos. | 210 | 517,151 | 45,688 | 585,030 | 134,192 | 322,000 | 11,299 | 265,227 | 47,661 | 780,415 | 133.40 | —195,385 | —210,929 | —217,227 | —145,306 |
| Quincy, Omaha & Kansas City | July | 252 | 36,665 | 23,061 | 69,468 | 26,199 | 8,531 | 829 | 36,976 | 2,109 | 77,307 | 111.30 | —7,839 | —11,763 | —17,525 | —38,535 |
| | 7 mos. | 252 | 374,385 | 165,155 | 600,155 | 207,736 | 106,298 | 5,605 | 290,887 | 16,459 | 625,519 | 104.20 | —25,364 | —52,894 | —86,182 | —135,147 |
| Richmond, Fred. & Potomac | July | 117 | 451,132 | 266,129 | 835,263 | 97,714 | 72,179 | 8,860 | 281,003 | 28,486 | 502,517 | 60.20 | 332,746 | 279,760 | 252,206 | 174,446 |
| | 7 mos. | 117 | 3,181,064 | 2,054,020 | 6,242,898 | 708,188 | 820,234 | 56,891 | 2,175,048 | 186,042 | 4,087,748 | 65.50 | 2,155,150 | 1,807,281 | 1,463,050 | 659,753 |
| Rutland | July | 415 | 222,437 | 143,007 | 482,092 | 89,282 | 64,721 | 7,865 | 208,855 | 11,666 | 384,083 | 79.70 | 98,009 | 76,726 | 80,030 | 43,906 |
| | 7 mos. | 415 | 1,751,049 | 819,325 | 3,223,053 | 633,004 | 618,927 | 57,548 | 1,482,745 | 91,142 | 2,893,642 | 89.80 | 329,411 | 182,288 | 209,370 | 43,635 |
| St. Louis-San Francisco | July | 4,760 | 4,575,862 | 1,716,447 | 6,747,227 | 943,551 | 1,344,647 | 89,685 | 2,330,767 | 207,724 | 4,894,270 | 72.50 | 1,852,957 | 1,522,985 | 1,357,118 | 1,541,949 |
| | 7 mos. | 4,760 | 32,369,972 | 10,482,566 | 46,167,646 | 6,735,145 | 8,847,224 | 594,282 | 16,530,891 | 1,335,040 | 33,877,133 | 73.40 | 12,290,513 | 9,936,486 | 9,826,074 | 9,412,306 |
| Ft. Worth & Rio Grande | July | 235 | 69,520 | 32,032 | 110,333 | 33,565 | 17,540 | 2,618 | 45,124 | 5,732 | 104,581 | 94.80 | 5,752 | 2,238 | —5,390 | 9,051 |
| | 7 mos. | 235 | 434,389 | 199,948 | 705,385 | 308,060 | 149,639 | 19,186 | 346,466 | 40,297 | 861,431 | 1,221 | —156,046 | —182,587 | —220,840 | —220,350 |
| St. Louis, San Fran. & Texas | July | 134 | 136,858 | 16,641 | 158,678 | 30,240 | 22,062 | 3,775 | 54,239 | 7,034 | 117,350 | 73.90 | 41,328 | 39,464 | 15,707 | 27,437 |
| | 7 mos. | 134 | 790,073 | 105,250 | 939,504 | 216,789 | 166,306 | 26,031 | 405,087 | 48,122 | 861,472 | 91.70 | 78,032 | 64,186 | —83,818 | —333,095 |
| St. Louis Southwestern | July | 968 | 1,127,153 | 139,893 | 1,326,660 | 131,512 | 145,870 | 43,031 | 421,224 | 53,776 | 800,886 | 60.40 | 525,774 | 446,729 | 439,534 | 356,111 |
| | 7 mos. | 968 | 8,361,190 | 905,206 | 9,677,898 | 1,362,126 | 1,448,652 | 301,425 | 2,614,950 | 376,642 | 6,141,319 | 63.50 | 3,536,579 | 3,082,132 | 2,868,627 | 2,594,762 |
| St. Louis Southwestern of Tex | July | 807 | 462,071 | 98,001 | 601,677 | 139,264 | 110,145 | 20,103 | 302,422 | 33,068 | 603,080 | 100.20 | —1,403 | —25,741 | —7,521 | —52,688 |
| | 7 mos. | 807 | 3,169,270 | 608,939 | 4,039,871 | 1,282,487 | 1,074,891 | 139,330 | 2,109,079 | 217,159 | 4,815,527 | 119.20 | —775,650 | —944,455 | —886,606 | —322,496 |
| San Antonio & Aransas Pass | July | 739 | 315,525 | 88,410 | 430,591 | 78,430 | 56,127 | 9,250 | 181,931 | 24,472 | 349,884 | 81.20 | 80,707 | 66,432 | 60,298 | 81,447 |
| | 7 mos. | 739 | 2,252,533 | 461,500 | 2,914,380 | 642,913 | 745,809 | 66,235 | 1,388,968 | 185,606 | 3,025,465 | 103.80 | —111,085 | —209,951 | —292,093 | —280,026 |
| San Antonio, Uvalde & Gulf | July | 317 | 72,781 | 18,597 | 97,023 | 14,978 | 7,985 | 2,749 | 32,820 | 7,288 | 65,828 | 67.80 | 31,105 | 28,211 | 13,965 | 23,917 |
| | 7 mos. | 317 | 427,152 | 118,480 | 611,505 | 99,712 | 81,252 | 19,756 | 238,350 | 45,480 | 483,311 | 79.00 | 128,194 | 107,285 | 29,329 | 60,459 |
| Seaboard Air Line | July | 3,563 | 2,152,120 | 662,389 | 3,210,196 | 414,780 | 373,264 | 130,784 | 1,372,954 | 1,170,281 | 2,487,129 | 77.48 | 723,067 | 547,205 | 325,958 | 4,881 |
| | 7 mos. | 3,563 | 17,823,418 | 5,189,455 | 25,636,703 | 2,865,859 | 4,207,205 | 866,028 | 10,966,173 | 1,089,395 | 20,215,953 | 78.86 | 5,420,750 | 4,212,238 | 2,356,995 | 647,664 |
| Southern | July | 6,971 | 6,373,503 | 2,714,552 | 9,920,459 | 1,412,327 | 1,789,337 | 204,657 | 4,098,832 | 297,011 | 7,885,255 | 79.50 | 2,035,204 | 1,538,150 | 1,201,190 | 1,163,008 |
| | 7 mos. | 6,971 | 49,707,323 | 16,831,706 | 71,915,915 | 10,233,883 | 13,151,411 | 1,471,067 | 28,515,581 | 2,243,227 | 56,164,347 | 78.10 | 15,751,568 | 12,450,909 | 10,078,616 | 3,306,956 |
| Alabama Gr. Southern | July | 318 | 276,952 | 172,229 | 484,920 | 81,193 | 169,461 | 20,645 | 225,421 | 23,332 | 525,381 | 108.30 | —40,461 | —86,925 | —106,572 | 105,320 |
| | 7 mos. | 318 | 3,901,552 | 1,034,115 | 5,196,387 | 594,135 | 1,070,834 | 128,053 | 1,996,433 | 173,050 | 4,000,892 | 97.00 | 1,195,495 | 890,302 | 884,042 | 349,986 |
| Cin., N. O. & Tex. Pacific | July | 338 | 707,910 | 280,849 | 1,057,519 | 171,842 | 248,643 | 32,388 | 417,895 | 39,211 | 917,369 | 86.70 | 140,150 | 61,176 | —50,867 | 247,273 |
| | 7 mos. | 338 | 7,853,337 | 1,870,816 | 10,176,770 | 1,131,277 | 2,633,220 | 198,522 | 3,561,199 | 295,031 | 7,885,967 | 77.50 | 2,290,803 | 1,781,468 | 1,535,137 | 1,024,186 |
| Georgia, Southern & Fl | July | 402 | 232,413 | 97,181 | 355,287 | 53,584 | 62,337 | 9,185 | 167,409 | 11,139 | 306,669 | 86.30 | 48,618 | 28,856 | 11,599 | —50,799 |
| | 7 mos. | 402 | 1,832,098 | 696,724 | 2,726,291 | 435,645 | 471,500 | 62,301 | 1,184,207 | 85,266 | 2,259,375 | 82.90 | 466,916 | 343,732 | 198,839 | —557,015 |
| New Orleans & Northeastern | July | 207 | 147,693 | 79,451 | 271,108 | 69,476 | 93,341 | 9,297 | 144,266 | 15,605 | 335,165 | 123.60 | —64,087 | —100,418 | —122,666 | —12,366 |
| | 7 mos. | 207 | 2,501,925 | 544,650 | 3,391,932 | 489,073 | 732,554 | 75,257 | 1,515,140 | 121,115 | 2,957,513 | 87.20 | 434,419 | 164,642 | 111,293 | —177,000 |
| Northern Alabama | July | 110 | 119,294 | 11,784 | 133,669 | 21,316 | 4,360 | 1,245 | 50,774 | 2,770 | 80,465 | 60.20 | 53,204 | 49,210 | 14,385 | —13,166 |
| | 7 mos. | 110 | 667,478 | 77,828 | 762,601 | 123,224 | 38,422 | 9,271 | 291,686 | 21,140 | 483,738 | 63.40 | 278,863 | 250,507 | 84,483 | —67,684 |
| Southern Pacific | July | 7,119 | 10,507,301 | 3,965,486 | 15,952,904 | 1,979,665 | 2,225,884 | 273,037 | 5,445,514 | 441,792 | 10,653,451 | 66.80 | 5,299,453 | 3,962,361 | 3,718,166 | 3,335,974 |
| | 7 mos. | 7,118 | 64,169,659 | 25,379,127 | 99,158,214 | 13,596,607 | 17,288,868 | 1,640,905 | 34,456,319 | 2,998,710 | 71,883,985 | 72.50 | 27,274,229 | 17,811,249 | 17,190,950 | 16,683,183 |

## REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1922—CONTINUED

| Name of road. | | Average mileage operated during period. | Operating revenues: Freight. | Passenger. | Total (inc. misc.) | Operating expenses: Maintenance of—Way and structures. | Maintenance of—Equipment. | Traffic. | Transportation. | General. | Total. | Operating ratio. | Net from railway operation. | Operating income (or loss). | Net after rentals. | Net after rentals 1921. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Arizona Eastern | July | 382 | $258,147 | $25,975 | $300,453 | $47,420 | $31,001 | $4,124 | $91,879 | $18,963 | $194,257 | 64.70 | $106,196 | $82,180 | $64,914 | —$154 |
| | 7 mos. | 382 | 1,529,607 | 199,310 | 1,794,521 | 220,639 | 196,760 | 22,347 | 517,146 | 131,605 | 1,093,489 | 60.90 | 701,032 | 534,091 | 434,017 | 17,783 |
| Atlantic S. S. Lines | July | ... | 786,769 | 49,685 | 884,291 | 12,307 | 201,135 | 20,919 | 549,997 | 29,331 | 813,689 | 92.00 | 70,602 | 58,330 | 58,980 | —190,692 |
| | 7 mos. | ... | 5,839,221 | 352,482 | 6,519,819 | 84,556 | 1,184,012 | 133,978 | 3,761,123 | 186,218 | 5,349,887 | 82.10 | 1,169,932 | 1,082,407 | 1,085,112 | 18,925 |
| Gal., Harris. & San Ant. | July | 1,379 | 1,155,171 | 368,274 | 1,604,657 | 344,183 | 272,155 | 34,256 | 689,186 | 72,166 | 1,425,251 | 88.80 | 179,406 | 126,719 | 93,435 | 30,867 |
| | 7 mos. | 1,379 | 8,808,869 | 2,602,009 | 12,110,823 | 2,305,697 | 2,400,914 | 258,638 | 4,856,949 | 506,784 | 10,391,072 | 85.80 | 1,719,751 | 1,358,068 | 1,045,645 | 861,062 |
| Houston & Texas Central | July | 923 | 729,609 | 274,550 | 1,072,628 | 214,400 | 229,668 | 23,442 | 377,151 | 42,681 | 884,278 | 82.40 | 188,350 | 143,278 | 117,759 | 137,230 |
| | 7 mos. | 923 | 5,441,203 | 2,008,934 | 7,976,854 | 1,491,509 | 1,591,732 | 165,707 | 2,933,211 | 293,331 | 6,459,487 | 81.00 | 1,517,367 | 1,209,098 | 981,645 | 101,156 |
| Houston, East & West Texas | July | 191 | 223,111 | 47,225 | 282,467 | 56,474 | 55,348 | 3,407 | 100,191 | 7,906 | 222,818 | 78.90 | 59,649 | 52,862 | 37,734 | 72,153 |
| | 7 mos. | 191 | 1,332,447 | 282,469 | 1,695,480 | 352,395 | 351,433 | 23,655 | 692,198 | 56,986 | 1,469,124 | 86.60 | 226,356 | 183,248 | 89,887 | 47,293 |
| Louisiana Western | July | 207 | 170,002 | 88,000 | 278,533 | 61,296 | 55,605 | 8,837 | 92,205 | 16,990 | 238,893 | 85.80 | 39,640 | 7,255 | 16,132 | 72,480 |
| | 7 mos. | 207 | 1,615,376 | 605,544 | 2,386,726 | 458,618 | 456,748 | 62,335 | 714,642 | 124,472 | 1,844,961 | 77.30 | 541,765 | 375,068 | 380,502 | 286,068 |
| Morgan's L. & T. R. R. & S. S. Co. | July | 400 | 344,506 | 153,677 | 542,509 | 133,922 | 169,174 | 15,388 | 246,734 | 31,058 | 601,034 | 110.80 | —58,525 | —104,826 | —112,225 | —23,622 |
| | 7 mos. | 400 | 2,981,565 | 1,050,229 | 4,392,725 | 977,986 | 1,026,481 | 113,896 | 1,836,522 | 233,887 | 4,221,958 | 96.10 | 170,767 | —156,803 | —256,273 | —540,861 |
| Tex. & New Orleans | July | 507 | 436,366 | 151,601 | 625,022 | 140,474 | 217,885 | 9,464 | 306,233 | 24,206 | 702,910 | 112.50 | —77,888 | —99,637 | —126,519 | —1,715 |
| | 7 mos. | 507 | 3,597,797 | 1,074,571 | 4,971,682 | 996,683 | 1,301,302 | 75,198 | 1,966,004 | 180,486 | 4,555,912 | 91.60 | 415,770 | 255,477 | 46,846 | —548,475 |
| Spokane International | July | 165 | 71,213 | 15,638 | 92,172 | 13,950 | 8,790 | 2,356 | 31,834 | 5,530 | 63,259 | 68.60 | 28,913 | 23,429 | 17,633 | 12,135 |
| | 7 mos. | 165 | 521,743 | 81,047 | 633,506 | 99,167 | 55,374 | 20,054 | 239,305 | 41,864 | 461,257 | 72.80 | 172,249 | 133,792 | 86,426 | 107,534 |
| Spokane, Portland & Seattle | July | 549 | 393,297 | 180,629 | 635,392 | 62,205 | 71,350 | 13,553 | 203,646 | 20,118 | 380,549 | 59.89 | 254,843 | 170,506 | 133,295 | 118,797 |
| | 7 mos. | 549 | 2,701,962 | 968,230 | 4,025,500 | 374,214 | 591,172 | 72,450 | 1,367,356 | 139,668 | 2,602,516 | 64.65 | 1,422,984 | 833,341 | 750,164 | 539,611 |
| Tennessee Central | July | 292 | 111,379 | 47,767 | 170,180 | 32,750 | 10,578 | 6,027 | 82,554 | 10,703 | 142,612 | 83.80 | 27,568 | 22,309 | —2,769 | —18,905 |
| | 7 mos. | 292 | 979,315 | 288,611 | 1,363,911 | 238,508 | 211,791 | 37,959 | 705,274 | 81,990 | 1,275,463 | 93.50 | 88,448 | 57,482 | —76,707 | —268,337 |
| Term. R. R. Assn. of St. Louis | July | 37 | ..... | ..... | 354,553 | 88,465 | 37,282 | 982 | 116,034 | 3,911 | 250,057 | 70.50 | 104,496 | 44,520 | 162,588 | 136,941 |
| | 7 mos. | 37 | ..... | ..... | 2,638,408 | 537,619 | 256,677 | 7,626 | 855,581 | 44,438 | 1,726,259 | 65.40 | 912,149 | 529,668 | 1,346,304 | 1,057,684 |
| East St. L. Connecting | July | 1 | ..... | ..... | 160,552 | 13,793 | 7,841 | 279 | 55,900 | 2,231 | 80,044 | 49.90 | 80,508 | 72,454 | 63,992 | 22,808 |
| | 7 mos. | 1 | ..... | ..... | 1,171,718 | 91,964 | 51,311 | 2,219 | 397,445 | 18,826 | 561,765 | 47.90 | 609,953 | 529,329 | 470,695 | 155,091 |
| St. L. Merchants' Bridge Term. | July | 9 | ..... | ..... | 261,410 | 43,240 | 31,842 | 867 | 132,887 | 4,316 | 213,152 | 81.50 | 48,258 | 30,628 | 39,782 | 54,933 |
| | 7 mos. | 9 | ..... | ..... | 2,042,956 | 283,389 | 186,320 | 6,784 | 983,872 | 32,223 | 1,492,588 | 73.10 | 550,368 | 416,530 | 550,857 | 277,975 |
| St. Louis Transfer | July | 6 | ..... | ..... | 57,260 | 10,954 | 4,953 | 161 | 33,188 | 1,431 | 50,687 | 88.50 | 6,573 | 5,692 | —1,729 | 34,793 |
| | 7 mos. | 6 | ..... | ..... | 427,834 | 70,262 | 30,693 | 1,284 | 230,864 | 11,757 | 344,860 | 80.60 | 82,974 | 79,526 | 23,238 | 243,251 |
| Texas & Pacific | July | 1,952 | 1,530,572 | 615,465 | 2,313,990 | 412,060 | 332,467 | 54,470 | 875,060 | 81,566 | 1,771,774 | 76.60 | 542,216 | 442,026 | 388,011 | 614,620 |
| | 7 mos. | 1,952 | 11,329,437 | 4,057,616 | 16,684,795 | 3,094,429 | 3,217,719 | 335,687 | 6,428,774 | 662,935 | 13,861,458 | 83.10 | 2,823,337 | 2,046,256 | 1,568,317 | 1,433,898 |
| Toledo, Peoria & Western | July | 247 | 76,820 | 41,237 | 131,199 | 23,620 | 25,843 | 3,149 | 75,212 | 8,014 | 135,838 | 103.50 | —4,639 | —15,695 | —12,484 | —24,552 |
| | 7 mos. | 247 | 534,703 | 313,285 | 922,423 | 162,487 | 238,485 | 20,386 | 480,521 | 54,787 | 956,594 | 103.70 | —34,171 | —111,627 | —132,562 | —322,853 |
| Toledo, St. Louis & Western | July | 454 | 827,290 | 39,932 | 907,968 | 121,727 | 129,479 | 21,280 | 279,344 | 19,570 | 571,375 | 62.90 | 336,593 | 288,593 | 238,150 | 110,972 |
| | 7 mos. | 454 | 5,348,632 | 194,257 | 5,814,225 | 725,265 | 951,281 | 150,713 | 1,862,688 | 175,648 | 3,865,570 | 66.50 | 1,948,655 | 1,617,584 | 1,423,701 | 492,078 |
| Trinity & Brazos Valley | July | 368 | 131,994 | 20,028 | 158,098 | 46,245 | 22,629 | 3,021 | 48,646 | 14,335 | 134,876 | 85.30 | 23,222 | 16,213 | —1,104 | 37,369 |
| | 7 mos. | 368 | 1,528,746 | 144,384 | 1,738,156 | 427,945 | 360,248 | 22,560 | 636,126 | 85,571 | 1,528,440 | 87.90 | 209,716 | 160,572 | —148,577 | —61,242 |
| Ulster & Delaware | July | 128 | 53,793 | 117,030 | 209,437 | 23,460 | 13,613 | 5,893 | 100,542 | 9,976 | 153,854 | 73.50 | 55,583 | 49,580 | 45,581 | 75,655 |
| | 7 mos. | 128 | 411,304 | 274,912 | 922,964 | 139,451 | 142,101 | 20,680 | 465,131 | 56,771 | 828,004 | 89.70 | 94,960 | 52,691 | 25,678 | —57,936 |
| Union | July | 45 | ..... | ..... | 1,168,898 | 85,543 | 172,755 | 169 | 415,120 | 7,684 | 681,271 | 58.30 | 487,627 | 472,542 | 545,354 | 183,285 |
| | 7 mos. | 45 | ..... | ..... | 6,240,165 | 503,682 | 1,265,817 | 1,664 | 2,506,026 | 49,807 | 4,326,996 | 69.30 | 1,913,169 | 1,817,594 | 2,224,512 | 1,030,784 |
| Union Pacific | July | 3,707 | 5,702,425 | 1,597,779 | 8,096,096 | 1,306,101 | 1,197,617 | 162,076 | 2,363,439 | 281,612 | 5,512,790 | 68.10 | 2,583,306 | 1,988,259 | 1,979,080 | 2,148,395 |
| | 7 mos. | 3,683 | 38,577,580 | 9,766,284 | 53,498,279 | 6,249,315 | 11,385,590 | 989,398 | 15,862,723 | 2,153,843 | 37,778,042 | 70.60 | 15,720,237 | 11,694,325 | 11,532,079 | 12,302,080 |
| Oregon Short Line | July | 2,359 | 1,851,293 | 538,505 | 2,592,961 | 538,983 | 352,184 | 43,564 | 901,562 | 95,591 | 2,006,515 | 77.40 | 586,446 | 307,294 | 292,983 | 102,566 |
| | 7 mos. | 2,359 | 14,419,384 | 3,106,429 | 18,973,550 | 3,046,606 | 3,746,578 | 320,281 | 6,117,550 | 815,357 | 14,459,405 | 76.20 | 4,514,145 | 2,580,213 | 2,450,431 | 1,083,370 |
| Oreg., Wash. R. R. & Nav. | July | 2,237 | 1,489,650 | 543,864 | 2,274,756 | 528,572 | 371,729 | 66,798 | 992,958 | 126,079 | 2,116,196 | 93.00 | 158,560 | —22,471 | —96,900 | —148,806 |
| | 7 mos. | 2,226 | 10,382,905 | 3,193,695 | 14,973,483 | 3,311,593 | 2,875,633 | 424,020 | 6,748,292 | 875,673 | 14,431,419 | 96.40 | 542,064 | —726,535 | —1,259,694 | —891,313 |
| St. Joseph & Gr. Island | July | 258 | 189,313 | 24,924 | 233,676 | 63,670 | 30,033 | 2,779 | 107,566 | 11,674 | 215,722 | 92.30 | 17,954 | 1,765 | —8,579 | —21,470 |
| | 7 mos. | 258 | 1,451,654 | 177,450 | 1,739,296 | 322,000 | 324,133 | 17,922 | 772,761 | 83,844 | 1,520,660 | 87.40 | 218,636 | 94,002 | 30,536 | —92,728 |
| Utah | July | 102 | 159,133 | 544 | 160,449 | 31,889 | 29,039 | 321 | 35,795 | 4,439 | 101,338 | 63.20 | 59,111 | 52,968 | 37,964 | —35,510 |
| | 7 mos. | 102 | 905,042 | 5,151 | 920,980 | 140,031 | 244,894 | 2,482 | 207,448 | 33,428 | 628,138 | 68.20 | 292,842 | 247,844 | 161,953 | —65,850 |
| Virginian | July | 526 | 1,227,140 | 75,846 | 1,415,114 | 166,143 | 261,506 | 11,867 | 407,207 | 32,744 | 878,562 | 62.10 | 536,552 | 406,019 | 404,219 | 484,224 |
| | 7 mos. | 526 | 10,678,321 | 452,986 | 11,900,312 | 1,278,972 | 2,765,071 | 81,308 | 2,610,215 | 219,788 | 6,952,971 | 58.40 | 4,947,341 | 4,164,902 | 4,237,441 | 3,401,524 |
| Wabash | July | 2,472 | 3,430,408 | 813,634 | 4,643,216 | 770,742 | 517,165 | 114,399 | 2,093,329 | 144,914 | 3,661,199 | 78.90 | 982,017 | 781,464 | 532,868 | 237,998 |
| | 7 mos. | 2,472 | 25,645,164 | 5,241,526 | 33,273,800 | 4,708,637 | 6,318,780 | 810,758 | 14,063,589 | 1,062,101 | 27,130,307 | 81.50 | 6,143,493 | 4,808,010 | 2,963,305 | 1,128,175 |
| Western Maryland | July | 804 | 1,050,597 | 104,195 | 1,251,617 | 154,411 | 261,488 | 38,504 | 439,961 | 44,123 | 962,247 | 76.80 | 289,370 | 249,370 | 260,085 | 256,249 |
| | 7 mos. | 804 | 8,250,871 | 540,931 | 9,495,656 | 1,208,051 | 1,926,331 | 233,832 | 3,346,135 | 316,476 | 7,179,236 | 75.60 | 2,316,420 | 2,006,420 | 1,822,559 | 1,720,742 |
| Western Pacific | July | 1,045 | 775,351 | 252,307 | 1,102,840 | 193,617 | 171,478 | 34,813 | 392,613 | 35,756 | 853,436 | 77.40 | 249,414 | 173,155 | 172,327 | 78,258 |
| | 7 mos. | 1,043 | 4,445,916 | 1,300,743 | 6,193,081 | 1,088,978 | 1,147,496 | 226,803 | 2,439,914 | 265,791 | 5,308,727 | 85.70 | 884,354 | 289,378 | 457,038 | 426,861 |
| **Wheeling & Lake Erie** | July | 511 | 984,507 | 80,284 | 1,182,134 | 200,370 | 208,341 | 25,320 | 438,099 | 32,429 | 908,594 | 76.90 | 273,540 | 164,980 | 121,982 | 318,907 |
| | 7 mos. | 511 | 6,918,383 | 497,882 | 8,005,064 | 1,198,323 | 1,605,903 | 128,985 | 2,811,976 | 237,378 | 6,007,530 | 75.00 | 1,997,534 | 1,201,872 | 1,054,123 | 769,130 |

### Employees as Solicitors

Solicitation of business, both freight and passenger, by employees in all departments, has now become such a regular thing on the lines of the Southern Pacific (Pacific System) that a permanent record is to be kept, with a "score board" showing the standing of the different divisions. If an employee gives a tip resulting in a freight shipment (less than a car-load) he is given ten points; for a car-load, 50 points; and one who gets the promise of all future business of a certain firm receives an award of 100 points. A local one-way ticket means one point; round trip, two points; through tickets to the East, five points; round trip, ten.

The first score board reads as follows:

| Divisions | Points August | Total to date |
|---|---|---|
| Los Angeles | 1435 | 1977 |
| General offices | 1075 | 1516 |
| Tuscon | 760 | 837 |
| Coast | 408 | 503 |
| Western | 119 | 197 |
| San Joaquin | 71 | 176 |
| Stockton | 9 | 139 |
| Salt Lake | 24 | 85 |
| Sacramento | .... | 10 |
| Shasta | 10 | 10 |
| Portland | 3 | 3 |

The bulletin issued by the company gives a long list of names of men in all departments who have secured business; also names of several women, one of whom got six car loads of freight from Phoenix, Ariz., to San Francisco.

### Reading at Work on Camden Terminal

Details of the plans for the new Camden terminal of the Philadelphia & Reading Railway, which, it is expected, will be ready for the 1923 summer season, have just been announced by the company. Work on the new terminal was begun several months ago and has now reached the stage of driving the piles and dredging the river for ferry slips. In the new terminal extensive additions to the company's ferry and track facilities will be provided to handle the growing seashore traffic.

The plans call for a two-story structure of steel frame and brick with stone trimmings on a concrete foundation built on piles. It will house the ferry slips, a train shed, a concourse, waiting rooms for men and women, a restaurant, and the offices of the Delaware River Ferry Company and of the seashore lines of the Philadelphia & Reading.

The river front end of the building, which will be built of copper, will house four modern electrically operated ferry slips. The spaces between the ferry slips will be used for the men and women's waiting rooms, for offices, and for the restaurant, all of which will be built of brick with stone trimming.

The concourse will be 328 feet long and 105 feet wide. It will lead directly to the train shed which will contain ten tracks for use in the company's regular service and four additional tracks for use at times when travel is especially heavy. All these tracks will be gated and practically all of them will be long enough to accommodate trains of fourteen cars. The train platforms will be built of concrete with butterfly shelters.

On the land side of the building the main entrance will be from Mechanic street. The plans for this part of the structure call for a two-story office building 115 feet long by 42 feet wide. On the first floor of this building will be the lobby, the ticket office, and facilities for handling express. The second floor will be occupied by the offices of the Reading's seashore lines. At the opposite end of the concourse from that occupied by the office building will be a brick power house used to generate the power necessary in the operation of the terminal.

Driveways leading into the terminal will be laid out, each of them wide enough to accommodate four lines of vehicles. There will be separate driveways for baggage and express. Adjoining the terminal proper will be a large storage yard for cars and a railroad Y. M. C. A. building for the use of trainmen.

The construction of the new terminal and the laying of the necessary tracks between it and the present Reading's seashore lines will require considerable filling in and the construction of several bridges. The relaying of the tracks also will eliminate the number of grade crossings existing on the present lines.

Provisions have been made in the plans, also, for the adaptation of the new terminal to the use of double-deck ferryboats should this become necessary.

## Traffic News

The Northern Pacific has restored the 20 branch line trains in Montana and Minnesota which were cancelled on July 20, to conserve coal. It is expected that other branch line trains, west of Paradise, Mont., will also soon be restored. The St. Louis Southwestern has announced its intention to reinstate 12 of its passenger trains in Texas which were discontinued on August 6, because of the coal shortage.

The Interstate Commerce Commission has issued Foreign Commerce Order No. 5, cancelling Foreign Commerce Order No. 2 issued on January 12, designating points on the railroad lines at which information relative to the handling of export shipments by common carriers by water in foreign commerce are required to be maintained and from which through bills of lading to foreign destinations in connection with ocean carriers whose vessels are registered under the laws of the United States to points in non-adjacent foreign countries are to be issued. This order is issued in accordance with Section 25 of the interstate commerce act.

The Public Service Commission of Indiana, acting in behalf of shippers of that state, opposes the approval by the Interstate Commerce Commission of reductions in freight rates from New York to the Pacific coast proposed by the Southern Pacific. The change will place New York shippers on an equal basis with competitors as far west as the Mississippi river on shipments to the Pacific coast. The proposed reductions are on 175 articles, including board, various kinds of paper, plumbers' goods, earthenware and stoneware, pumps and sprayers, certain agricultural implements, clay and clay products, tile roofing, bottles, jars, glass, bars and bent iron, wire fencing, nails and stoves.

### Traffic Statistics for First Half of 1922

The number of ton miles of revenue freight handled by the railroads of the country during the first six months of 1922 was 152,435,057,000, as compared with 146,832,606,000 in the corresponding period of 1921, according to the monthly bulletin of traffic statistics issued by the Interstate Commerce Commission. Although the volume of freight increased, the freight revenue decreased from $1,863,986,628 to $1,859,121,583, and the average revenue per ton miles decreased from 1.269 cents to 1.22 cents. The revenue passenger miles totaled 16,487,117,000, as compared with 18,382,451,000 last year. The passenger revenues decreased from $574,734,980 to $502,763,758 and the average revenue per passenger mile decreased from 3.127 cents to 3.049 cents.

### New Grain Rate Case

The Public Utilities Commission of Kansas has filed with the Interstate Commerce Commission a complaint against all carriers in the Western rate group, asking for a reduction of rates on grain, grain products and hay between points in the Western group. The complaint recites the increase in rates on the commodities mentioned in Ex Parte 74, the reduction required in the Western grain rate case effective December 27, 1921, and the general reduction in rates required in the reduced rate case, 1922, which was effective July 1. It is then alleged that the reductions ordered in the Western grain rate case "were for the purpose of removing injustices and to establish a proper level and relationship as between commodities, and the level and relationship which was established has been seriously disturbed by the decision of the commission in 'Reduced Rates' by the exception from this decision of grain, grain products and hay, carload rates between points in the Western group resulting in unreasonable and unjustly discriminatory interstate rates." It is also alleged that considering prevailing production costs and farm and market values of the commodities involved the existing interstate rates are prohibitory and operate to the serious disadvantage of the shippers of these commodities and are unjust and unreasonable, unjustly discriminatory and unduly prejudicial. The Kansas commission will press for an early hearing, and has invited the cooperation of other commissions in the Western group.

# Commission and Court News

## Interstate Commerce Commission

The Commission has vacated its order in the Nevada intrastate rate case in which it ordered the rates increased to correspond with the increase made in interstate rates, the Public Service Commission of Nevada having vacated its order which prescribed lower rates.

## United States Supreme Court

### Southern Pacific Control of Central Pacific Severed

The case of the United States vs. Southern Pacific was reported in the *Railway Age* of June 3, page 1296. The government was sustained in its plea for severance of the control of the Central Pacific by the Southern Pacific, as in violation of the Sherman Act, the Supreme Court's decision reverses the decree of the federal district court for the District of Utah (239 Fed. 998). In the course of its opinion, the Supreme Court said that considered collectively, the cases of Northern Securities Co. vs. United States, 193 U. S. 197, 327; United States vs. Union Pacific, 226 U. S. 61, and United States vs. Reading Co., 253 U. S. 26, 57, 58, 59, had established that "one system of railroad transportation cannot acquire another, nor a substantial and vital part thereof, when the effect of such acquisition is to suppress, or materially reduce the free and normal flow of competition in the channels of interstate trade." The defendants contended that the suit was barred by laches on the part of the government in failing to institute it earlier; but the court was unable to discover that laches existed. The stock acquisition complained of was in 1899. In 1901 the Union Pacific acquired control of the Southern Pacific by purchase of sufficient stock to accomplish that purpose. The Union Pacific case was begun in 1908, and a final decree reached in 1913, and in 1914 this suit was begun. United States vs. Southern Pacific. Opinion by Mr. Justice Day, Mr. Justice McKenna dissented in separate opinion. Justices McReynolds and Brandeis took no part in the decision. Decided May 29, 1922.

### What Is Employment in Interstate Commerce?

In proceedings by a railroad employee under the California Workmen's Compensation Act, in which the State Commission awarded relief which award was reversed by the District Court of Appeal, the Supreme Court of the United States had before it, on certiorari, the question whether redress for injuries received while working in the general repair shops of the company upon a locomotive which had been employed in interstate commerce and which was destined to be so employed again must be sought through the Workmen's Compensation Act or the Federal Employers' Liability Act.

The state and federal decisions applying the jurisdictional test are diverse, and the court below pointed out that the Supreme Court had fixed no rule by which the conflict could be resolved, but had remitted the decision of each case to its particular facts. The Supreme Court says, of its decisions on the point, that "a precise ruling, one that enables an instant and undisputed application, has not been attempted to be laid down. . . . We refrain from a review of our cases. They pronounce a test and illustrate it. We are called upon to apply it to the present controvery. . . . We are brought to a consideration of degrees. There may be only a placement upon a sidetrack or there may be a definite withdrawal from service and placement in new relations. The locomotive in the present case was placed in the shop for general repairs on December 19, 1918. On February 25, 1919, after work upon it, it was given a trial and it was placed in service on March 4, 1919. The accident occurred on February 1 of that year, the engine at the time being nearly stripped and dismantled. It was not interrupted in an interstate haul to be repaired and go on. Judgment reversed and cause remanded. Industrial Accident Commission of California vs. Payne. Opinion by Mr. Justice McKenna. Decided May 29, 1922.

# Foreign Railway News

### Complete Details of Large Construction Program of South African Railways Obtainable in New York

As has previously been announced in the *Railway Age*, the South African Railways are planning to undertake at an early date the construction of some 850 miles of new line. This work will involve, of course, extensive purchases of track and construction material. The National Bank of South Africa, 44 Beaver Street, New York City, has the detailed prospectus which the government has prepared to cover this work, and all of the projects contemplated are therein described in detail. This company, which is the fiscal agent of the government of the Union of South Africa, will be glad to allow any American manufacturer who is interested in furnishing any of the material needed to inspect this prospectus at its New York office.

### French Railway Orders Control Equipment for 120 Electric Locomotives

An order covering the complete control equipment for 120 electric locomotives, now under construction, has been received by the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., from the Paris-Orleans Railway of France as part of an electrification contract amounting to approximately $8,000,000.

The Paris-Orleans Railway, which is one of the largest systems in France operating over 5,000 route miles of track, is electrifying 125 miles of its main line between Paris and Vierzon. This is the first of an extensive program laid out by the Paris-Orleans for the electrification of its lines.

The complete order of control equipment will be manufactured in the United States and shipment of this order will commence in January, 1923, and extend to December, 1924.

### China Notes

PEKING.

The political situation continues to dominate everything in China. None of the military movements which it was supposed two months ago were to be determining factors in the march of events have proved to be decisive. In the South, Sun Yat Ser is staging a "come back" by means of the navy after it was supposed that he had been eliminated by Chen Chung Ming, the friend of Wu Pei Fu. In the North, Wu Pei Fu has been influenced to withdraw his forces from the Manchuria border leaving Chang Tso Lin in possession of the Peking-Mukden rolling stock and much of the Salt Gabelle revenue. Wu's nominal chief, Tsao Kun, is connected by marriage with Chang Tso Lin and is negotiating for the complete recognition of Chang with restoration of honors, and for a mandate of censure to apply to Wu equally with Chang for precipitating the late hostilities. Midway between North and South, Wu's forces are harassed in Honan by heavily armed banditry under the direction of the late Tuchun of the province, and in Kiangsi by adherents of Sun Yat Sen. Parliament is expected to convene in three days, whereat the log-rolling for the election of a regular president to succeed acting-president Li Yuan Hung is expected to occupy much of the autumn period. It is said that the present minister of communications has now secured the support of Tsao Kun and is likely to remain in office indefinitely, although still actively opposed by the old "Chiaotung" (communications) clique.

Passenger service has been restored almost to normal. Express trains are running as usual to Shanghai and to Hankow. The week-end special to Peitaiho beach, which during the past four years has been a regular feature of the summer season has not been resumed.

Tsao Kun's forces continue to collect the revenue of the Peking-Hankow line. His representatives have offered to permit this to go to the ministry of communications providing the ministry can advance a million dollars and continue to contribute $800,000 monthly. The line earns only about $1,800,000

a month under normal conditions of which about $800,000 is required for operating expenses. After paying the military's $800,000 only $200,000 would be left, which is about one-third of the amount necessary to repay instalments due on mortgage bonds and interest charges.

Just what diplomatic moves are going to be made as a result of Chang Tso Lin's seizing of the Peking-Mukden rolling stock is a matter of considerable importance. The British and Chinese corporation, which is trustee for the bondholders who hold the mortgage on the property and the revenue of the Peking-Mukden, have gone through the preliminary formalities of demanding of the ministry of communications the restoration of the line, of invoking the aid of the British legation, which in turn has repeated the demand to the Chinese foreign office, all of which are helpless. The British see clearly that if a Chinese military freebooter once "gets away" with a seizure of British pledged property, in this way, it will be only a short time before their whole vast interests in China are lost, as all of them are valuable and highly revenue producing. At the same time, to land forces and recover the possession of this property is more apt to stir up all China against them than it is to secure the friendship of the Peking government, whose battle they fight and whose position they save. Incidentally, the Japanese have a second mortgage upon a portion of this line, and as an invasion of Manchuria would be required, and in spite of the Washington conference, when it comes to Manchuria there is still a "sphere of influence" in China—it is quite likely that the Japanese government would be displeased with any such movement unless the British should yield to the Japanese a voice in the management of the Peking-Mukden line. Hence the British have every reason for giving the Chinese plenty of time for working out a solution in their own way.

Announcement has just been made of a traffic agreement between the Chinese Eastern Railway and the South Manchurian Railway by which rates are reduced on the Chinese Eastern from Harbin to Changchun on the route to Dairen and raised on the section from Harbin toward Vladivostock. Also, a rebate of $3.55 per ton is to be paid the Chinese Eastern by the South Manchurian for beans delivered at Dairen if originated west of Harbin. The effect of this will be to divert the entire bean trade of Manchuria from Vladivostock to Dairen and a considerable portion of all other kinds of traffic originating west of Harbin. This all goes toward confirming the impression that now Japan really means to withdraw her troops from Siberia. It is stated, and as frequently denied, that the gage from Harbin to Changchun will be narrowed from the Russian 5 ft. to the Japanese 4 ft. 8½ in., so that through trains will be run from Harbin to Dairen. If at the same time the Japanese could work out an arrangement with the British by which that portion of the Peking-Mukden north of the Great Wall were also handed over to Japanese management, the economic conquest of Manchuria would be practically complete.

The Ministry of Communications has made public a summary of its financial obligations as follows:

| | |
|---|---|
| Domestic— | |
| Short term loans and advances | $11,864,654.23 |
| Redeemable bonds | 11,320,000.00 |
| Overdrawn bank accounts | 706,938.03 |
| Pledged for the redemption of private railways | 38,326,880.68 |
| | $62,218,472.94 |
| Foreign— | |
| Loans contracted by the ministry | $63,235,547.72 |
| Loans contracted by subordinate departments | 72,776,913.58 |
| Obligations upon the railways and telegraphs | 298,367,008.00 |
| Loans made by the ministry of finance secured on the property and revenues of the railways and telegraphs, but for which the ministry of finance is responsible | 106,200,000.00 |
| | $540,579,469.30 |
| Grand total | $602,797,942.24 |

This tabulation omits several millions due on current accounts for which creditors are pressing for settlement. Much of the above total bears interest rates of nine to twelve per cent, but the long-term loans at present rates of exchange work out to a little over four per cent. But the upshot is that some $36,000,000 a year is required for interest payments, omitting entirely the large repayments which are now falling due. The railways last year had a total net revenue of some $41,000,000 of which perhaps $33,000,000 was cash applicable to purposes of this kind. Telegraphs barely pay their way, but the postal department makes a small surplus, which under its foreign co-director general it devotes to betterments of the service. Hence the ministry of communications no longer has credit.

# Equipment and Supplies

## Locomotives

THE DULUTH & IRON RANGE is inquiring for 8 Mikado type locomotives.

THE VIRGINIAN RAILWAY contemplates buying some heavy type Mallet locomotives.

THE CHICAGO, BURLINGTON & QUINCY contemplates buying about 50 locomotives.

THE ATCHISON, TOPEKA & SANTA FE is contemplating the purchase of 100 locomotives.

THE NEW YORK CENTRAL has ordered 100 locomotives from the American Locomotive Company.

THE CHESAPEAKE & OHIO is negotiating for the purchase of 50 compound Mallet type locomotives.

THE WESTERN MARYLAND has ordered 10 Consolidation type locomotives from the Baldwin Locomotive Works.

THE NORFOLK & WESTERN is inquiring for from 20 to 40 Mallet type locomotives and 12 Mountain type locomotives.

THE TEXAS & PACIFIC is inquiring for 8 Pacific type locomotives and is considering the purchase of 8 switch engines.

THE NORTHERN PACIFIC is contemplating the purchase of a large number of locomotives, the number of which is still undetermined.

THE CHICAGO, ROCK ISLAND & PACIFIC is inquiring for 10, 2-10-2 type locomotives, and contemplate buying 30 Mikado type and 10 Mountain type locomotives.

THE ST. LOUIS-SAN FRANCISCO, reported in the *Railway Age* of September 9 as inquiring for 35 Mikado and 15 Mountain type locomotives, has ordered this equipment from the Baldwin Locomotive Works.

## Freight Cars

THE UNION PACIFIC is inquiring for 50 caboose cars.

THE WESTERN PACIFIC is inquiring for 100 gondola cars.

THE ATLANTIC COAST LINE is inquiring for 2,000 box cars of 40 tons' capacity.

THE WABASH is inquiring for repairs to 300 stock cars, 250 automobile cars and 500 box cars.

THE BETHLEHEM-CHILE IRON MINES COMPANY is now inquiring for 20, 50-ton special hopper ore cars.

THE PITTSBURGH, SHAWMUT & NORTHERN is inquiring for 200 stock cars of 30 tons' capacity and 50 box cars of 40 tons' capacity.

THE SCHENECTADY VARNISH COMPANY, Schenectady, N. Y., has ordered one tank car of 8,000 gallons capacity from the Standard Tank Car Company.

THE CENTRAL OF GEORGIA, reported in the *Railway Age* of August 19 as inquiring for 100 cars of 40 tons' capacity, has ordered this equipment from the Virginia Bridge & Iron Company.

THE GREAT NORTHERN is inquiring for 100 tank cars, new or second hand, of 12,000 gal. or less capacity for carrying fuel oil. The company is also considering the question of leasing 100 tank cars.

THE NEW YORK, NEW HAVEN & HARTFORD, reported in the *Railway Age* of September 2 as inquiring for 6 caboose cars, has ordered this equipment from the Keith Car & Manufacturing Company.

THE CINCINNATI, INDIANAPOLIS & WESTERN, reported in the *Railway Age* of September 2 as inquiring for 300 high side gondola cars of 50 tons' capacity, has ordered this equipment from the Pullman Company.

THE ST. LOUIS-SAN FRANCISCO, reported in the *Railway Age* of September 2 as inquiring for 500 hopper car bodies of 50 tons' capacity, has ordered 1,000 of 55 tons' capacity from the American Car & Foundry Company.

THE ILLINOIS CENTRAL, reported in the *Railway Age* of August 19 as inquiring for 75 caboose cars, has ordered this equipment from the American Car & Foundry Company. The cars are to have steel underframes and are to have a capacity of 30,000 lb.

THE WEST VIRGINIAN PULP & PAPER COMPANY, New York City, reported in the *Railway Age* of August 12 as inquiring for 10 steel underframe box cars, has ordered these cars from the Western Steel Car & Foundry Company. The cars are to have a capacity of 80,000 lb.

## Passenger Cars

THE ALASKAN ENGINEERING COMMISSION, Seattle, Wash., is inquiring for two baggage cars.

THE UNITED STATES BUREAU OF MINES has ordered 2 rescue cars from the American Car & Foundry Company.

THE LONG ISLAND contemplates inquiring soon for 90 steel passenger coaches, 80 of the cars are for electric service and 10 for steam service.

THE GRAYSONIA, NASHVILLE & ASHDOWN, successor in part to the Memphis, Dallas & Gulf, contemplates the purchase of passenger, express and baggage motor car equipment.

THE ATLANTIC COAST LINE, reported in the *Railway Age* of June 10 as having ordered 20 express cars and 10 coaches from the Bethlehem Shipbuilding Corporation, Harlan plant, has increased its order to 25 steel express cars and to 25 steel coaches.

THE TENNESSEE CENTRAL, reported in the *Railway Age* of September 9 as inquiring for 3 combination mail and baggage cars and 6 passenger coaches, has ordered 3 combination mail and baggage cars, 3 combination coaches and 3 steel coaches from the Bethlehem Shipbuilding Corporation, Harlan plant.

## Iron and Steel

THE WABASH is inquiring for 20,000 tons of 90-lb. rails.

THE CHICAGO, ROCK ISLAND & PACIFIC has ordered 8,000 tons of rail from the Illinois Steel Company.

THE LOUISIANA RAILWAY & NAVIGATION COMPANY has ordered 3,000 tons of rail from the Tennessee Coal, Iron & Railroad Company.

THE UNITED STATES STEEL CORPORATION announces an increase in the price of standard steel rail from $40 to $43 a ton, to become effective on October 1.

THE SOUTH MANCHURIAN RAILWAY ordered recently through a New York City export house 700 tons of tie plates from the U. S. Steel Products Corporation.

THE IMPERIAL JAPANESE GOVERNMENT RAILWAYS received bids recently through export houses in New York City for 4,800 tons of 60 lb. rail and 218 tons of splice bars.

## Machinery and Tools

THE GRAND TRUNK is inquiring for one flanging machine and one Nazel hammer.

THE ATCHISON, TOPEKA & SANTA FE has ordered a 10-ton hand power crane from the Whiting Corporation.

THE GENERAL ELECTRIC COMPANY, Schenectady, N. Y., is inquiring for four, 5-ft. radial drills, also for one, 6-ft. radial drill.

THE ILLINOIS CENTRAL, reported in the *Railway Age* of June 10 as inquiring for a large list of machine tools, has completed negotiations for $250,000 worth, exclusive of motors.

THE CHICAGO, BURLINGTON & QUINCY has placed an order with the Whiting Corporation for two 125-ton electric overhead traveling cranes, one 125-ton hoist and one auxiliary 15-ton hoist.

THE CHICAGO, BURLINGTON & QUINCY is about to place orders for overhead electric traveling cranes for its shops at Denver, Colo., and for two gantry cranes for use in its scrap yard at Aurora, Ill.

THE PENNSYLVANIA is inquiring for 4 double trolley overhead traveling cranes and for 8 single trolley overhead traveling cranes, to include 2 of 250 tons' capacity, 2 of 60 tons', 2 of 25 tons' and 6 of 15 tons'.

THE UNION PACIFIC, reported in the *Railway Age* of July 8 as having issued a machine inquiry comprising 73 items, has now placed orders with various companies for approximately $200,000 worth of machine tools.

THE CHICAGO, BURLINGTON & QUINCY, reported in the *Railway Age* of July 8 as having issued a machine inquiry comprising 117 items, is expected to place orders this week for a large number of the machine tools. This company has two lists before the trade, one comprising 117 items mentioned above, and another including 78 items for shops at various points on the system.

## Miscellaneous

THE IMPERIAL JAPANESE GOVERNMENT RAILWAYS requested bids through export houses in New York City, on 32,900 couplers for freight cars. The bids were wanted on September 15, at Tokio, Japan.

THE UNION PACIFIC received bids until September 15 for its requirements for one year beginning on the above date for incandescent lamp bulbs aggregating approximately $150,000 in net value.

THE NEW YORK CENTRAL is asking for bids until 12 o'clock noon September 26, for cast iron car wheels for car and locomotive service and track material, including switch points, frogs, switches, guard rails, etc.

THE PITTSBURGH & LAKE ERIE will receive bids until 12 o'clock noon September 26, at Pittsburgh, Pa., for its three months' requirements of car, engine truck, and driving wheel axles, Portland cement, stove pipe iron, pickled sheet steel, galvanized sheet iron, wire nails, wire rope, steel billets, bars, shapes and plates, boiler tubes, annealed copper wire, insulated wire, annealed iron wire, tinned iron wire, and soft steel wire.

THE NORFOLK & WESTERN will receive bids until 12 o'clock noon September 27, at Roanoke, Va., for its requirements from October 1 to December 31, 1922, of couplers and repair parts, also for locomotive tires and for brake shoes. Bids are also wanted on 2,000 tons of steel plates, shapes and bars. Separate bids are wanted for its requirements of brake shoes from October 1, 1922, for a period of six months and from the same date for a period of twelve months.

## Signaling

THE MISSOURI, KANSAS & TEXAS in connection with the construction of its new freight yard at Dennison, Texas, is installing 12 signals; 8 Style S three-position semaphores and 4 color-light signals. The material is furnished by the Union Switch & Signal Company.

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THE TYRONE DIVISION of the Pennsylvania Railroad reports having passed through the shopmen's strike without the loss of a single man. This division connects with the Main Line at Tyrone, Pa. Its lines aggregate 279 miles in length, and it employs 1,720 men. General Manager C. S. Krick has sent congratulations to the superintendent on "the wonderful loyalty displayed by the men in remaining at work during the trying days of the strike, particularly when men on the adjacent divisions left their work in considerable numbers and exerted every effort to induce the employees of the Tyrone division to join them. You and your subordinates evidently have created and maintained among your employees that old-time feeling of loyalty and affection for the company and its interests that has done so much to make the Pennsylvania Railroad what it is today."

# Supply Trade News

**The Economy Fuse & Manufacturing Company,** Chicago, Ill., has moved its Detroit sales offices from the Majestic building in that city to the First National Bank building.

**The American Brake Shoe & Foundry Company,** New York, has bought 17 acres of land at Portsmouth, Va., where it is proposed to erect a new plant in the near future for the manufacture of brake shoes.

**The Norwalk Iron Works Company,** South Norwalk, Conn., has been consolidated with the **Automatic Carbonic Machine Company** of Peoria, Ill. The plant and equipment of the latter company has been moved to South Norwalk.

**H. M. Aubrey,** manager of the packing department of the **Union Asbestos & Rubber Company,** Chicago, has been appointed sales representative of that company in charge of the recently opened New York Office, 30 Church street, New York City.

**The Ramapo Iron Works** with plants at Hillburn and Niagara Falls, N. Y., and Niagara Falls, Ontario, and the **Ajax Forge Company** of Chicago with plants at Chicago and Superior, Wis., have been consolidated under the name of the **Ramapo-Ajax Corporation,** with **J. B. Strong** as president and headquarters at Hillburn. The control of the new company will be held by the American Brake Shoe & Foundry Company, New York.

## Obituary

**John H. Flagler,** who organized the National Tube Company and served as its president until it was merged with the United States Steel Corporation, died on September 8 at his country home in Greenwich, Conn.

*From the Indianapolis News*

**Out Again**

# Railway Construction

ATCHISON, TOPEKA & SANTA FE.—This company will construct an underground crossing with 80 ft. girders on concrete abutments at Britton, Okla. This company will also construct a subway with steel superstructure under two tracks at Twenty-third street, Oklahoma City, Okla.

CHICAGO, BURLINGTON & QUINCY.—This company has awarded contracts to the following companies: Home Builders' Association, Wichita, Kan., for a power house at Alliance, Neb.; Jones Engineering Company, Omaha, Neb., for an addition to the power house at Lincoln, Neb.; G. A. Johnson & Sons, Chicago, for a passenger station at Elsberry, Mo., which inquiry was reported in the *Railway Age* of August 5; W. G. Zitterell, Webster City, Iowa, for a freight house at Ziegler Junction, Ill., which inquiry was reported in the *Railway Age* of August 26; G. A. Johnson & Sons, Chicago, for a freight house at Aurora, Ill.

CHICAGO UNION STATION.—This company will close bids on September 18 for the construction of concrete track slabs and track drainage system for the north approach tracks, the installation of fibre conduit for high and low tension leads between Washington and Lake streets and the excavation for permanent station tracks between Van Buren and Harrison streets.

ILLINOIS CENTRAL.—This company has awarded a contract to Ellington Miller Company, Chicago, for remodeling the freight house with new concrete paved transfer platform at Indianapolis, Ind., to cost $45,000.

ILLINOIS CENTRAL.—This company, which was reported in the *Railway Age* of August 5 as calling for bids for the rebuilding of 12 water treating plants, has awarded the contract for the four at Dunlap, Iowa and Manchester, and at La Salle, Ill., and Scales Mound to the International Filter Company, Chicago.

JEFFERSON SOUTHWESTERN.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of a line from a connection with the Chicago & Eastern Illinois near Mt. Vernon, Ill., to a connection with the Chicago, Burlington & Quincy, 3 miles south of Waltonville, Ill., 14.5 miles.

KANSAS, OKLAHOMA & GULF.—This company is preparing plans for the extension of approximately 6½ miles of its lines from Baxter Springs, Kan., to a connection with the Joplin branch of the Missouri, Kansas & Texas.

MICHIGAN CENTRAL.—This company has awarded a contract to Ellington Miller Company, Chicago, for a three-story office building 60 ft. by 75 ft. at Detroit, Mich., to cost approximately $80,000.

PENNSYLVANIA.—This company is receiving bids for the construction of the substructure of an overhead bridge at Josephine, Pa., Cresson division, Black Lick branch, State Highway Route No. 68. The approximate quantities are as follows: 1,050 cu. yd. foundation excavation; 430 cu. yd. foundation masonry; and 975 cu. yd. neat masonry. The work is in charge of George Nauman, assistant to chief engineer, Pittsburgh, Pa.

SOUTHERN PACIFIC.—This company will construct extensions to its sidings at Crystal Lake, Cal., Cisco and Troy at a cost of approximately $250,000 and involving considerable rock excavation. This company will also double track its line across the Techachapi mountains at a cost of approximately $1,000,000. It will also enlarge the tunnels along this line and reline them with concrete at a cost of $2,800,000. The work on two of these, Tunnel 25 at San Ferando, Cal., and Tunnel 26 at Hasson will cost $1,800,000. Electrically operated turntables 100 ft. long will be installed at Ashland, Ore., Siskiyou, and Dunsmuir, Cal., and San Luis Obispo, at a total cost of about $200,000. This company will also relay 300 miles of track with new 90-lb. rail at a cost of $4,500,000, renew 2,600,000 ties at a cost of $4,500,000 and apply 1,000,000 cu. yd. of crushed rock and slag ballast at a cost of $2,500,000. This company also contemplates grade reductions and double tracking on the Central Pacific portions of the system.

# Annual Report

## The Baltimore and Ohio Railroad Company

BALTIMORE, Md., July 20th 1922.

*To the Stockholders of The Baltimore and Ohio Railroad Company:*

The President and Directors of the Company submit herewith report of the affairs of the Company for the year ended December 31st, 1921. While this is the ninety-sixth report published by the Company, it in fact covers the operations of the Company for its ninety-fifth year, one of the previous reports having been for an over-lapping period due to a change in the fiscal year.

### OPERATIONS OF THE YEAR.

During the entire year of 1921 the transportation property of the Company was operated solely by the Company on its own behalf and upon its own responsibility, the first whole year so operated since 1917. The property was operated by the Director General of Railroads under Federal control from January 1st, 1918, to February 29th, 1920, and by the Company under the guaranty provisions of the Transportation Act of 1920, from March 1st to August 31st, 1920.

The business depression which began in the fall of 1920, continued throughout the year, resulting in a very marked decline in the traffic handled. While the loss of revenue due to the decline in the volume of traffic was partly offset by the increase in rates and charges, made effective August 26th, 1920, the total revenues were less than anticipated because of the numerous rate reductions made throughout the year 1921 on certain commodities, particularly those relating to agriculture, building operations, road construction, etc., such as grain and grain products, lumber, iron ore, sand, gravel, coal, etc., which commodities constitute a large portion of the Company's traffic. In these circumstances it became necessary to curtail the expenses to the lowest point consistent with safe and efficient operation. The reduction in revenues was in part offset by reduction in wages authorized by the United States Railroad Labor Board and made effective July 1st, 1921, and also by some decrease in the prices of material and fuel.

### PROPERTY OPERATED.

The mileage of the properties operated by The Baltimore and Ohio Railroad Company, excluding separately operated subsidiaries, is shown in Table 19, and may be summarized as follows, viz.:

| | First Main Track. | Total all Tracks. |
|---|---|---|
| Miles owned and operated | 4,956.06 | 9,786.97 |
| Miles leased and operated | 150.11 | 344.53 |
| Total miles owned, leased and operated | 5,106.17 | 10,131.50 |
| Miles of trackage rights over which the Company operates | 81.01 | 162.17 |
| Total miles over which the Company operates | 5,187.18 | 10,293.67 |

There was an increase of 31.99 miles of first main track during the year 1921, due principally to the inclusion in the Company's operations of the mileage of the Little Kanawha Railroad Company and the Belington and Northern Railroad Company, which companies had been separately operated prior to January 1st, 1921.

The equipment of the properties embraced in the above mileage is shown in detail in Table 18, page 30, and consists of:

2,683 Locomotives.
94,932 Freight Train Cars.
1,300 Passenger Train Cars.
2,633 Work Train Cars and other Work Equipment.
167 Tug Boats, Car Floats and other Floating Equipment.
Miscellaneous Equipment of various kinds.

The total investment of the Company in property used in and held for transportation service, excluding investments in separately operated properties, is $707,032,851.36, and is shown in Table 2, page 14. The operations of the property embraced in this investment produce the Net Railway Operating Income as defined by the Transportation Act of 1920.

The income accounts of six subsidiary companies, with mileage of 218.34 miles, are shown separately. The net profit or loss of these subsidiaries and other separately operated properties is absorbed and transferred to the income account of the parent company through the medium of the accounts "Separately Operated Properties"—Profit or Loss—as the case may be, so that the Corporate Income Account as shown in Table 1, comprises the net income of the entire Baltimore and Ohio System.

The total first main track mileage operated by the Company and its separately operated subsidiaries is 5,405.52 miles.

### RAILWAY OPERATING INCOME.

Railway Operating Income as defined by the Transportation Act of 1920 is shown in Table 5.

As before stated, the results shown for the year 1921 are from operations conducted wholly by the Company for its own account. During the year 1920, Net Income from Property used in Transportation Service included compensation accrued under the contract with the Director General of Railroads for January and February, 1920; guaranty accrued under the terms of the Transportation Act of 1920 for the period March 1st to August 31st, 1920; and railway operating income for the period September 1st to December 31st, 1920. For this reason the items comprising Net Income from Property used in Transportation Service for 1921, as shown in Table 1, are not comparable with those for 1920. However, for comparative purposes there is shown in Table 5, railway operating results for the years 1920 and 1921.

Referring to Table 5, it will be seen that freight revenues for 1921, in comparison with 1920, decreased $26,289,416.31, or 14.39 per cent., reflecting in part the decline in industrial activity which began in the fall of 1920, and continued throughout the year 1921. The extent of the decline in freight traffic may also be measured by the revenue tons carried, which for the year 1921 amounted to 71,536,702 tons, compared with 101,924,520 tons in 1920, a decrease of 29.81 per cent. As a further indication of the extent of the decline in business, it may be mentioned that the revenue tons carried one mile, decreased from 20,932,667,112 tons in 1920, to 14,198,727,702 tons in 1921, or 32.17 per cent., due to a shorter average haul as well as a lesser volume of tonnage. Table 15, shows the decline in tonnage by commodities, and in comparison with the year 1920 indicates a decrease of 12.40 per cent. in products of agriculture, 30.44 per cent. in products of mines, 31.05 per cent. in products of forest, and 34.58 per cent. in manufactures and miscellaneous. Freight traffic statistics may be found in Tables 11 and 12.

Passenger earnings for 1921 decreased $1,852,336.30, or 5.94 per cent. below 1920. There were 4,325,427, or 17.06 per cent. fewer passengers carried, and 167,795,712, or 15.83 per cent. fewer passengers carried one mile per mile of road in 1921, when compared with 1920. Passenger traffic statistics may be found in Tables 13 and 14.

Mail revenue for the year shows a decrease under 1920 of $1,579,954.08, which is due wholly to the inclusion in the figures for 1920 of $2,104,680.97 above the earnings of that year representing additional allowances by the Government for services rendered in the years 1916 to 1919, so that if this additional allowance is eliminated in the comparison of 1921 with 1920, there is an actual increase in favor of 1921 of $524,726.89, or 23.50 per cent.

Express revenue decreased $2,571,758.43, or 55.17 per cent., part of which is due to the downward trend of business and part to the revision of the divisions established by the Director General of Railroads, and which remained in effect throughout the first eight months of 1920. Other revenues, including switching, storage, demurrage, etc., decreased $1,028,605.41, or 11.36 per cent., also due to the falling off in business activities.

Total operating revenues for the year were $198,622,372.81, of which 78.75 per cent. was from freight, 14.77 per cent. from passenger, 1.39 per cent. from mail, 1.05 per cent. from express, and 4.04 per cent. from all other revenues. The decrease in gross revenue for the year compared with 1920, was $33,322,070.53, or 14.37 per cent.

Maintenance of way and structures expenses during 1921, were $24,617,808.24, a decrease as compared with 1920 of $8,441,474.61, or 25.53 per cent, and Maintenance of Equipment expenses for the year were $45,129,

TABLE 1.

CORPORATE INCOME AND SURPLUS ACCOUNTS.

Year Ended December 31, 1921, in Comparison with Year Ended December 31, 1920.

*(Excluding Operations of Federal Control Under Director General.)*

THE BALTIMORE AND OHIO RAILROAD COMPANY

| Corporate Income Account. | Year 1921. | Year 1920. | Increase or Decrease. |
|---|---|---|---|
| Average Miles Operated | 5,187.18 | 5,155.19 | 31.99 |
| Railway Operating Revenues: | | | |
| Freight | $156,421,212.45 | | |
| Passenger | 29,331,034.36 | | |
| Mail | 2,757,398.27 | | |
| Express | 2,089,844.92 | | |
| Other Transportation Revenue | 2,970,932.93 | | |
| Miscellaneous Revenue | 5,051,949.88 | | |
| Total Railway Operating Revenues | $198,622,372.81 | | |
| Railway Operating Expenses: | | | |
| Maintenance of Way and Structures | $24,617,808.24 | | |
| Maintenance of Equipment | 45,129,857.14 | | |
| Traffic | 3,301,677.46 | | |
| Transportation | 85,481,386.51 | | |
| Miscellaneous Operations | 1,579,430.69 | | |
| General | 6,385,386.61 | | |
| *Transportation for Investment—Credit* | *38,522.18 | | |
| Total Railway Operating Expenses | $166,457,024.47 | | |
| Net Revenue from Railway Operations | $32,165,348.34 | | |
| Ratio of Operating Expenses to Operating Revenues | 83.81% | | |
| Other Operating Charges: | | | |
| Railway Tax Accruals | $7,236,726.44 | | |
| Uncollectible Railway Revenues | 41,638.62 | | |
| Equipment Rents—Net Debit | 2,097,724.08 | | |
| Joint Facility Rents—Net Debit | 935,713.12 | | |
| Total Other Operating Charges | $10,311,802.26 | | |
| Net Income from Property used in Transportation Service | $21,853,546.08 | $26,434,295.24 | *$4,580,749.16 |
| Other Corporate Income: | | | |
| Income from Lease of Road | $17,427.43 | $18,284.46 | *$857.03 |
| Miscellaneous Rent Income | 1,088,161.15 | 967,170.02 | 120,991.13 |
| Miscellaneous Nonoperating Physical Property | 144,667.31 | 122,711.00 | 21,956.31 |
| Separately Operated Properties—Profit | 446,926.91 | 441,807.81 | 5,119.10 |
| Dividend Income | 1,907,299.00 | 1,887,629.50 | 19,669.50 |
| Income from Funded Securities | 1,665,521.20 | 1,610,651.85 | 54,869.35 |
| Income from Unfunded Securities and Accounts | 489,644.78 | 288,359.95 | 201,284.83 |
| Income from Sinking and Other Reserve Funds | 70,272.55 | 51,404.50 | 18,868.05 |
| Miscellaneous Income | 4,290,903.80 | 11,839.45 | 4,279,064.35 |
| Total Other Corporate Income | $10,120,824.13 | $5,399,858.54 | $4,720,965.59 |
| Gross Corporate Income | $31,974,370.21 | $31,834,153.78 | $140,216.43 |
| Deductions from Gross Corporate Income: | | | |
| Rent for Leased Roads | $329,770.23 | $340,760.41 | *$10,990.18 |
| Miscellaneous Rents | 479,547.62 | 475,978.61 | 3,569.01 |
| Miscellaneous Tax Accruals | 246,974.35 | 297,707.09 | *50,732.74 |
| Separately Operated Properties—Loss | 1,287,425.00 | 737,097.83 | 550,327.17 |
| Interest on Funded Debt | 22,534,069.45 | 21,960,591.49 | 573,477.96 |
| Interest on Unfunded debt | 583,148.26 | 200,667.31 | 382,480.95 |
| Miscellaneous Income Charges | 124,544.03 | 575,870.34 | *451,326.31 |
| Total Deductions from Gross Corporate Income | $25,585,478.94 | $24,588,673.08 | $996,805.86 |
| Net Corporate Income | $6,388,891.27 | $7,245,480.70 | *$856,589.43 |

During the year 1920, Net Income from Property used in Transportation Service included compensation accrued under the contract with the Director General of Railroads for January and February, 1920; Guaranty accrued under the terms of the Transportation Act of 1920 for the period March 1st to August 31st, 1920; and railway operating income for the period September 1st to December 31st, 1920. For this reason the items comprising Net Income from Property used in Transportation Service for 1921 are not comparable with those for 1920. However, for comparative purposes there is shown in Table 5, railway operating results for the years 1920 and 1921.

*Indicates decrease.

857.14, a decrease when compared with the previous year of $23,742,958.52, or 34.47 per cent. Total maintenance charges for the year were $69,747,665.38, and constituted 41.90 per cent. of all operating expenses and 35.12 per cent. of all operating revenues.

Transportation expenses for the year were $85,481,386.51, a decrease as compared with 1920 of $28,322,722.65, or 24.89 per cent. and comprised 51.35 per cent. of total operating expenses and 43.04 per cent. of total operating revenues.

All other expenses for the year were $11,227,972.58, an increase over 1920 of $564,872.43, or 5.30 per cent. and were 6.75 per cent. of total expenses and 5.65 per cent. of total revenues. This increase is largely due to increase in traffic expenses, occasioned principally by the re-establishment and expansion of agencies at various important points off the line of road.

Total operating expenses for 1921 were $166,457,024.47, a decrease under 1920 of $59,942,283.38, or 26.48 per cent., compared with a decrease in operating revenues of $33,322,070.53, or 14.37 per cent. The ratio of operating expenses to operating revenues was 83.81 per cent. in 1921, and 97.61 per cent. in 1920, a decrease of 13.80 per cent.

## CORPORATE INCOME AND SURPLUS.

The income and surplus accounts of the Company will be found in Table 1, and it will be seen that the net income for 1921 from property used in transportation service, or "Net Railway Operating Income" as it is defined in the Transportation Act, was $21,853,546.08, equivalent to 3.09 per cent. on the investment in property devoted to transportation service, or about one-half of the return contemplated by the Act which permitted a return of six per cent. as reasonable. There was a decrease in net railway operating income as compared with 1920 of $4,580,749.16, but of this amount $2,648,358.01 is due to setting up in 1921 reserves in the operating accounts to provide for lapover items pertaining to the guaranty period and chargeable to the United States under the Transportation Act of 1920, resulting in a corresponding increase in Other Corporate Income.

Other Corporate Income for the year is shown as $10,120,824.13, an increase over 1920 of $4,720,965.59. This large increase is due principally to the inclusion as income, under instructions of the Interstate Commerce Commission, of amounts found to relate to the guaranty period and chargeable to the United States under the Transporation Act of 1920.

Deductions from Gross Corporate Income aggregated $25,585,478.94, an increase over 1920 of $996,805.86, made up of increases in interest on funded and unfunded debt, and losses incurred by separately operated properties, which were also affected by the general decline in business.

From the Net Corporate Income for the year of $6,388,891.27, shown in the Corporate Surplus Account, there was appropriated $3,500,000.00 in accordance with the provisions of the $35,000,000.00 loan agreement of July, 1919, and applied in the retirement at maturity of outstanding long term debt.

Dividends on the Preferred Stock of the Company at the customary rate of four per cent. per annum were declared during the year.

## SETTLEMENTS WITH THE UNITED STATES.

Settlement with the Director General of Railroads for use of the property during Federal control has not been completed. The Company's claims have been presented and final action is expected within a short time..

Final settlement has not as yet been effected with the Government for the operations of the property during the guaranty period, March 1st, to

TABLE 2. GENERAL BALANCE SHEET. YEAR ENDED DECEMBER 31, 1921.

ASSETS.

| | | | | | Comparison with December 31, 1920. |
|---|---|---|---|---|---|
| **INVESTMENT IN PROPERTY USED IN TRANSPORTATION SERVICE:** | | | | | |
| Investment in Property Directly Owned: | | | | | |
| Road | | | $248,071,127.35 | | |
| Equipment | | | 157,783,123.64 | | |
| | | | | $405,854,250.99 | |
| Investment in Subsidiary Companies Operated as Constituent Parts of the Company | | | | 288,759,972.74 | |
| Investment in Miscellaneous Physical Property Held for Transportation Purposes | | | | 4,447,415.13 | |
| Investment in Improvements to Leased Railway Property | | | | 1,530,012.50 | |
| Investment in Perpetual Leaseholds—Capitalized (per contra) | | | | 6,441,200.00 | |
| Total Property Investment as related to Railway Operating Income | | | | $707,032,851.36 | I $10,895,871.92 |
| **OTHER INVESTMENTS:** | | | | | |
| Investment in Subsidiary and Affiliated Companies Separately Operated: | PLEDGED. | UNPLEDGED. | TOTAL. | | |
| Stocks | $8,600,423.73 | $3,491,845.61 | $12,092,269.34 | | |
| Bonds | 35,800,000.00 | 1,347,501.00 | 37,147,501.00 | | |
| Miscellaneous | ..... | 5,731,869.54 | 5,731,869.54 | | |
| Total | $44,400,423.73 | $10,571,216.15 | ..... | $54,971,639.88 | |
| Investment in Other Miscellaneous Physical Property | | | | 4,339,131.58 | |
| Investment in Sinking Funds: | | | | | |
| Securities of Carrier's Own Issue | | | $166,000.00 | | |
| Other Assets | | | 2,441.14 | 168,441.14 | |
| Deposits in Lieu of Mortgage Property Sold | | | | 28,263.00 | |
| Investment in Other Companies: | PLEDGED. | UNPLEDGED. | TOTAL. | | |
| Stocks | $21,936,187.96 | $596,133.32 | $22,532,321.28 | | |
| Bonds | 217,000.00 | 611,971.47 | 828,971.47 | | |
| Miscellaneous | ..... | 1,054,477.98 | 1,054,477.98 | | |
| Total | $22,153,187.96 | $2,262,582.77 | ..... | 24,415,770.73 | |
| Total Other Investments | | | | $83,923,246.33 | I $534,535.28 |
| Grand Total of all Investments | | | | $790,956,097.69 | I $11,430,407.20 |
| **CURRENT ASSETS:** | | | | | |
| Cash | | | | $12,000,561.13 | |
| Special Deposits | | | | 32,716.39 | |
| Loans and Bills Receivable | | | | 107,378.60 | |
| Traffic and Car Service Balances Receivable | | | | 17,992,783.60 | |
| Net Balances Receivable from Agents and Conductors | | | | 5,334,453.64 | |
| Miscellaneous Accounts Receivable | | | | 11,886,734.33 | |
| Materials and Supplies | | | | 23,588,295.91 | |
| Rents Receivable | | | | 23,620.82 | |
| Total Current Assets | | | | $70,966,544.42 | D $14,101,901.92 |
| **DEFERRED ASSETS:** | | | | | |
| Working Fund Advances | | | | $103,489.96 | |
| Insurance Fund: | | | | | |
| Securities of Carrier's Own Issue | | | $436,000.00 | | |
| Other Assets | | | 608,443.86 | 1,044,443.86 | |
| Other Deferred Assets | | | | 249,011.71 | |
| United States Government Transportation Act of 1920 | | | | 9,371,575.43 | |
| United States Railroad Administration | | | | 73,484,373.93 | |
| Total Deferred Assets | | | | $84,252,894.89 | D $3,432,222.06 |
| **UNADJUSTED DEBITS:** | | | | | |
| Rents and Insurance Premiums Paid in Advance | | | | $39,155.26 | |
| Other Unadjusted Debits (interdepartmental accounts in process of adjustment) | | | | 2,138,885.13 | |
| Total Unadjusted Debits | | | | $2,178,040.39 | D $1,785,493.58 |
| **SECURITIES OF CARRIER'S OWN ISSUE—UNPLEDGED:** | | | | | |
| Stocks | | | | $1,508,738.51 | |
| Bonds | | | | 7,736,755.00 | |
| Total Securities of Carrier's Own Issue—Unpledged | | | | $9,245,493.51 | D $1,099,220.00 |
| **SECURITIES OF CARRIER'S OWN ISSUE—PLEDGED:** | | | | | |
| Washington Branch Stock (per contra) | | | | $1,650,000.00 | |
| Bonds | | | | 53,755,550.00 | |
| Total Securities of Carrier's Own Issue—Pledged | | | | $55,405,550.00 | I $8,251,000.00 |
| Grand Total | | | | $1,013,004,620.90 | D $737,430.36 |

I indicates increase. D indicates decrease.

August 31st, 1920, under the Transportation Act of 1920. Claims for the amount due have been filed with the Interstate Commerce Commission and action by that body is awaited.

## ADDITIONS AND BETTERMENTS TO ROAD.

Expenditures for additions and betterments during the year 1921 amounted to $3,518,123.91, and are shown in Table 4, grouped substantially according to the Interstate Commerce Commission classification for expenditures for road. A summarization of the more important work undertaken or completed during the year 1921 follows:

The work of rearranging and enlarging the freight yards and tracks at Locust Point, Baltimore, Md., to accommodate increasing commercial development, was completed during the year.

An extension of the Astor Branch was placed in operation during the year, and further extensions of this branch are in progress.

The Norton Branch was relocated and extended.

The new bridge crossing the Miami River at Lawrenceville, Indiana, was completed and placed in service October 1st, 1921, thus eliminating the necessity of detouring traffic over foreign lines for about ten miles, made necessary by the destruction of the old bridge by an ice gorge in February, 1918.

After the acquisition of the Bridge Company of Foxburg, referred to in the report of last year, the work of renewing the three main spans of the bridge over the Allegheny River at Foxburg, Penna., was immediately undertaken. This work was completed in 1921.

The renewal and strengthening of bridges is being carried forward according to a carefully arranged schedule, designed to preserve safe conditions and gradually to extend the operating limits of the heavier class of motive power. During the year 1921, work was completed on spans 14 and 15 of the Benwood Bridge over the Ohio River at Wheeling, W. Va. Work was also completed on the bridge at Confluence, Pa., on four bridges on the Wheeling, Pittsburgh and Baltimore Branches, and on the bridge structures at Lookout Avenue, Butler, Pa., and Miami Street, Toledo, Ohio. Reconstruction of several bridges on the Parkersburg Branch is now under way, and work is also in progress on bridges at West Junction, O., Painesville, O., Elyria, O., Washington, Pa., West Alexandria, Pa., Lumbrook, Del., and Mitchell, Indiana.

Automatic signal protection was installed on 11.50 miles of double track between Callery Junction and Wildwood, Pa., and controlled manual block was installed between Camden and Mt. Royal Stations, Baltimore, Md. Additional train and crossing signals were installed at various points.

### Corporate Income and Surplus Accounts

Year Ended December 31, 1921, in Comparison with Year Ended December 31, 1920

(Excluding Operations of Federal control under Director General)

| | | | |
|---|---|---|---|
| **Corporate Surplus Account** | | | |
| Profit and Loss Account: | | | |
| Credit Balance Dec. 31, 1920 | ..... | ..... | $21,194,959.59 |
| Net Corporate Income for year 1921 | ..... | $6,388,891.27 | |
| Miscellaneous Adjustments—Net Credit | ..... | 330,816.99 | 6,719,708.26 |
| Total | ..... | ..... | $27,914,667.85 |
| Appropriations during year 1921: | | | |
| Income applied to Sinking and Other Reserve Funds | ..... | $148,556.15 | |
| Income applied in redemption of funded debt outstanding | ..... | 3,500,000.00 | |
| Dividends on Pfd. Stock at 4 per cent per annum | ..... | 2,354,529.14 | 6,003,085.29 |
| Credit Balance Dec. 31, 1921 | ..... | ..... | $21,911,582.56 |
| Additions to Property Through Income and Surplus: | | | |
| Credit Balance Dec. 31, 1920 | ..... | $12,611,649.22 | |
| Income applied in redemption of funded debt outstanding | 3,500,000.00 | ..... | |
| Miscellaneous | 924,617.22 | 4,424,617.22 | |
| Credit Balance Dec. 31, 1921 | ..... | ..... | 17,036,266.44 |
| Sinking Fund Reserves | ..... | ..... | 168,441.14 |
| Total Corporate Surplus, Credit Balance Dec. 31, 1921 | ..... | ..... | $39,116,290.14 |

TABLE 2—Concluded. General Balance Sheet. Year Ended December 31, 1921.

### LIABILITIES.

| | Outstanding. | Held by or for company. | Total issued. | Comparison with December 31, 1920. |
|---|---|---|---|---|
| Stock: | | | | |
| Capital Stock: | | | | |
| Common Stock | $151,945,548.54 | $371,919.46 | $152,317,468.00 | |
| Preferred Stock | 58,863,180.95 | 1,136,819.05 | 60,000,000.00 | |
| Separate Stock—Washington Branch (per contra) | ..... | 1,650,000.00 | 1,650,000.00 | |
| Total Capital Stock | $210,808,729.49 | $3,158,738.51 | $213,967,468.00 | ..... |
| Long Term Debt: | | | | |
| Funded Debt Unmatured: | | | | |
| Equipment Obligations | $38,989,674.70 | ..... | $38,989,674.70 | |
| Mortgage Bonds | 298,454,835.00 | $56,820,395.00 | 355,275,230.00 | |
| Collateral Trust Bonds | 93,976,590.00 | 5,273,910.00 | 99,250,500.00 | |
| Miscellaneous Obligations | 80,065,684.52 | ..... | 80,065,684.52 | |
| Total Long Term Debt | $511,486,784.22 | $62,094,305.00 | $573,581,089.22 | I $12,826,711.25 |
| Capital Stock and Funded Debt of Leased Lines (per contra): | | | | |
| Dayton and Michigan R. R. Co., Common Stock | $2,396,950.00 | $5,000.00 | $2,401,950.00 | |
| Dayton and Michigan R. R. Co., Preferred Stock | 1,211,250.00 | ..... | 1,211,250.00 | |
| Dayton and Michigan R. R. Co., First Mortgage Bonds | 2,728,000.00 | ..... | 2,728,000.00 | |
| Home Avenue R'y Co., Capital Stock | 100,000.00 | ..... | 100,000.00 | |
| Total Capitalized Leaseholds | $6,436,200.00 | $5,000.00 | $6,441,200.00 | ..... |
| Total Capital Obligations and Capitalized Leaseholds | $728,731,713.71 | $65,258,043.51 | $793,989,757.22 | I $12,826,711.25 |
| Current Liabilities: | | | | |
| Loans and Bills Payable | | | $3,000,000.00 | |
| Traffic and Car Service Balances Payable | | | 10,707,214.76 | |
| Audited Account and Wages Payable | | | 11,828,409.69 | |
| Miscellaneous Accounts Payable | | | 7,525,029.74 | |
| Interest Matured Unpaid | | | 3,682,998.38 | |
| Dividends Matured Unpaid | | | 64,510.23 | |
| Funded Debt Matured Unpaid | | | 8,000.00 | |
| Unmatured Dividends Declared | | | 1,177,263.62 | |
| Unmatured Interest Accrued | | | 3,675,604.12 | |
| Unmatured Rents Accrued | | | 22,647.51 | |
| Other Current Liabilities | | | 62,079.35 | |
| Total Current Liabilities | | | $41,753,757.40 | D $14,509,995.13 |
| Deferred Liabilities: | | | | |
| Liability for Provident Funds | | | $3,245,178.16 | |
| Other Deferred Liabilities | | | 1,220,204.03 | |
| United States Railroad Administration | | | 84,344,796.13 | |
| Total Deferred Liabilities | | | $88,810,178.32 | D $5,188,478.49 |
| Unadjusted Credits: | | | | |
| Tax Liability | | | $1,529,780.27 | |
| Insurance Reserve | | | 1,044,443.86 | |
| Operating Reserves | | | 5,595,178.93 | |
| Accrued Depreciation—Equipment | | | 38,949,494.82 | |
| Other Unadjusted Credits (interdepartmental accounts in process of adjustment) | | | 2,215,739.94 | |
| Total Unadjusted Credits | | | $49,334,637.82 | I $824,650.68 |
| Corporate Surplus: | | | | |
| Additions to Property Through Income and Surplus | | | $17,036,266.44 | |
| Sinking Fund Reserves | | | 168,441.14 | |
| Profit and Loss: | | | | |
| Balance | | | 21,911,582.56 | |
| Total Corporate Surplus | | | $39,116,290.14 | I $5,309,681.33 |
| Grand Total | | | $1,013,004,620.90 | D $737,430.36 |

I indicates increase. D indicates decrease.

The following securities bear the endorsement of The Baltimore and Ohio Railroad Company, jointly with other Companies, viz.: Kentucky and Indiana Terminal Railroad Company, 1st Mortgage Sterling Bonds, $6,282,780.60; Richmond-Washington Company, 1st Mortgage Bonds $10,000,000.00; Washington Terminal Company, 1st Mortgage Bonds, $12,000,000.00. The Company, through its subsidiary, The Toledo and Cincinnati Railroad Company, guarantees $2,728,000.00 Consolidated First Mortgage Bonds of The Dayton and Michigan Railroad Company. The Company guarantees $2,427,600.00 notes of the Morgantown and Kingwood Railroad Company, given in payment of equipment allocated by the Director General of Railroads.

The above General Balance Sheet presents an accurate statement of the accounts of the Company as of December 31, 1921.

J. J. EKIN, *Comptroller.*

ADDITIONS AND BETTERMENTS TO EQUIPMENT.

The total equipment owned by the Company and in service at December 31st, 1921, together with equipment of constituent companies operated as Baltimore and Ohio Railroad Company, is shown in Table 18.

| | | | |
|---|---|---|---|
| The total ledger value of equipment held in the name of the Company on December 31st, 1920, was | | | $150,715,718.98 |
| During the year 1921 there were added 50 locomotives, 2,059 freight train cars and 23 pieces of other equipment, costing | | | $9,003,833.31 |
| During the same perior there were retired from service and written out of the investment account, 5 locomotives, 2,400 freight train cars, 24 passenger cars, and 420 pieces of other equipment, having a ledger value of | $1,854,818.09 | | |
| There were reductions in value, incident to change of class of equipment, of | 81,610.56 | | |
| | | 1,936,428.65 | |
| | | | 7,067,404.66 |
| Total ledger value of equipment held in the name of the Company on December 31st, 1921 | | | $157,783,123.64 |

SUBSIDIARY COMPANIES AND OPERATIONS.

Beginning January 1st, 1921, the operations of the Little Kanawha and Belington and Northern Railroad Companies, which had therefore been separately operated, were includeed in the operations of the parent company.

Income accounts for the year 1921 for the several separately operated railroad properties will be found in Table 20. The result of the operations of these properties was a net deficit of $687,564.96, which was met by a charge against the income of the parent Company, so that the net income as stated in Table 1, reflects the final results of operations of all companies owned and operated.

RELIEF DEPARTMENT—PENSIONS.

Statements showing the operations of the Relief and Savings Features of the Relief Department will be found in Table 17.

The payments to retired employes constitute a special roll and are contributed by the Company from month to month. The total number of retired employes carried on the pension rolls in 1921 was 1,181, and the pensions paid during the year amounted to $380,013.60. There was an increase of 79 pensioners and $27,623.10 in pensions paid during the year as compared with 1920. The total payments in pensions to employes retired from service since the inception of the Pension Feature October 1st, 1884, aggregate $4,630,316.55.

Of the more than 60,000 employes of the Company, 40,069 are members of the Relief Department.

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The number of shareholders in the Company as of December 31st, 1921, was 35,640.

For the purpose of brevity as well as at the suggestion of various shareholders, and with the view to economy, the annual report has been somewhat curtailed by the elimination of certain detailed data and statistical tables. Complete data with respect to the operations of the property are, of course, on file with the Interstate Commerce Commission, and information relating to previous years is available in preceding annual reports.

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The reduction in cost of operation and the improved standard of service accomplished during the year covered by this report were both due in large measure to the loyal and efficient efforts of the officers and employes. The board wishes to record its appreciation of their efforts. Their continued helpful co-operation in improving the service and efficiency of the Company is earnestly desired.

By order of the Board.

DANIEL WILLARD, President.

[ADVERTISEMENT]

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FOUR HUNDRED AND NINETY-SEVEN freight cars, valued at almost $1,000,000, were exported from the United States in June. Of these 200 went to Argentina and 100 to Chile.

TWO HUNDRED MILLION DOLLARS is the value of merchandise handled by the American Railway Express, in San Francisco, in the course of 12 months, according to the estimate of H. R. Hislop, superintendent, in an article published in a San Francisco business paper. This freight is in four million shipments. In the busy season followng the war, the San Francisco office dealt with four train loads of silver each month; 12 cars to a train and 500 bars of silver in a car. Millinery and other dry goods from eastern cities constitute a considerable portion of the regular business. Bread to the amount of 500 cases is shipped daily to surrounding cities and towns; milk brought in averages 30,000 gallons daily and the daily receipts of veals average 500. Motion picture films, handled largely between sundown and midnight, constitute a traffic which requires a special room with a man in attendance every hour of the 24. During the rush hours following the close of evening entertainments, a pick-up service has to be furnished to every exchange in the city and over 200 of these shipments have to be sent out within an hour and a half after they are received. Films have to be receipted for the same as money. Express service is maintained on 70 outward trains and 70 inward each day, requiring the services of 182 messengers. In the city, altogether, the company employs 1,000 persons, 100 wagons, 40 gasoline trucks, 5 electric trucks and 14 electric towing tractors.

# Railway Financial News

ALABAMA GREAT SOUTHERN.—*Annual Report.*—The annual report issued last week shows the following income account for the year ended December 31, 1921:

| | 1921 | †1920 |
|---|---|---|
| Operating revenues | $9,542,225 | |
| Operating expenses | 8,196,320 | |
| Net revenue from operations | $1,345,905 | |
| Taxes | 325,691 | |
| Operating income | 1,020,786 | $2,177,783 |
| Total non-operating income | 427,697 | 236,193 |
| Gross income | $1,448,483 | $2,413,976 |
| Interest on funded debt | 475,945 | 465,239 |
| Total deductions | 913,394 | 754,808 |
| Balance of income over charges | 535,090 | 1,659,168 |
| Dividends on preferred stock | * | 236,625 |
| Dividends on ordinary stock | * | 548,100 |
| Additions and betterments charged to income | | 1,093 |
| Balance carried to profit and loss | $535,090 | $873,350 |

* Dividends of 6½ per cent on preferred and ordinary stock charged to profit and loss.

† Operating revenues and expenses are not comparable, the property having been operated by the U. S. R. A. during January and February, 1920.

BALTIMORE & OHIO.—*Annual Report.*—This company's annual report for 1921 is reviewed in an article on another page of this issue, entitled "Will Baltimore & Ohio Pay a Common Dividend?" See also excerpts from annual report on adjacent pages.

CHICAGO GREAT WESTERN.—*Receivership Rumor Denied.*—President S. M. Felton says: "There is absolutely no truth whatever in the rumors of receivership. We have just got through paying the September 1 interest and no more is due until March 1. We are handling more business than ever before."

CHICAGO, ROCK ISLAND & PACIFIC.—*Authorized to Issue Bonds.*—The Interstate Commerce Commission has authorized an issue of $1,000,000 of first and refunding mortgage gold bonds, to be sold at not less than 83½.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—*Dividends Declared.*—This company has declared a dividend of 2 per cent on the common stock, payable November 1 to stock of record September 29. In June, last, a similar dividend was paid, so that the payment of 2 per cent on November 1 will put the stock on a 4 per cent dividend basis for the year.

The company has also declared the regular quarterly dividend of 1¼ per cent on the preferred stock, payable October 20 to stock of record September 29.

DULUTH & NORTHERN MINNESOTA.—*Sold.*—This railroad, extending from Knife River, Minn., to Mile Post, 99.25 miles, has been sold to R. Waldron. On July 15, 1921, the Interstate Commerce Commission authorized the abandonment of the entire railroad. It is planned to use the D. & N. M. as a nucleus for the construction of the Duluth & Ontario, which will extend from Duluth, Minn., to Fort William, Ont. (Canada), a distance of 216 miles. Mr. Waldron will be president of the new company and will be associated with a number of Duluth and Minneapolis men, among them being H. Baxter, of Minneapolis, attorney of the Duluth, Winnipeg & Pacific; M. J. Dooley, of Minneapolis, general manager of the Minneapolis, Northfield & Southern, and R. M. Hunter of Duluth and James S. Sebree of Pierre, S. D.

ILLINOIS CENTRAL.—*Asks Authority for Equipment Trust.*—This company has applied to the Interstate Commerce Commission for authority to issue $6,645,000 of equipment trust certificates to be sold to Kuhn, Loeb & Co. at 95 on a basis to cost 5.32 per cent.

LOUISIANA & NORTH WEST.—*Bond Redemptions.*—Under the provisions of a voluntary sinking fund instituted by the directors, by which 20 per cent of net earnings applicable to dividends is set aside for bond redemptions, the company will receive at its office, 347 Madison avenue, New York, up to noon October 2, written orders for redemption of $12,000 of its first mortgage bonds. A quarterly dividend of 1½ per cent will be paid to stock-

holders of the road on October 1 to holders of record September 15.

MARSHALL, ELYSIAN FIELDS & SOUTHEASTERN.—*Charter Granted.*—A charter has been granted by the State of Texas to this company to operate with a steam locomotive that part of the old Marshall & East Texas, extending between Marshall, Tex., and Elysian Fields, a distance of 17½ miles. The capital stock is $30,000. A request for a charter to operate a motor car was refused. The officers of the road are M. Turney, president, Marshall, Tex.; J. B. Furrh, vice-president, Elysian Fields, Tex., and W. L. Berry, secretary-treasurer. The headquarters of the company will be at Marshall.

MOBILE & OHIO.—*Annual Report.*—The annual report issued last week shows the following income account for the year ended December 31, 1921:

| | 1921 | *1920 |
|---|---|---|
| Operating revenues | $18,190,180 | |
| Operating expenses | 16,124,530 | |
| Net revenues from operations | $2,065,650 | |
| Taxes | 737,627 | |
| Operating income | 1,174,974 | †$730,449 |
| Total non-operating income | 786,670 | 1,414,749 |
| Gross income | $1,961,644 | $684,300 |
| Interest on funded debt | 1,354,215 | 1,359,090 |
| Total deductions | 1,759,938 | 1,811,426 |
| Balance carried to profit and loss | $201,705 | †$1,127,127 |

* Operating revenues and expenses are not comparable, the property having been operated by the U. S. R. A. during January and February, 1920.
† Deficit.

NASHVILLE, CHATTANOOGA & ST. LOUIS.—*Asks Authority for Equipment Trust.*—This company has applied to the Interstate Commerce Commission for authority to assume liability in connection with an equipment trust agreement which provides for the payment of $497,037 in cash and $1,800 in 15 annual instalments at 4½ per cent. The certificates are proposed to be sold to J. P. Morgan & Co. at 94.89.

NEW ORLEANS & NORTHEASTERN.—*Annual Report.*—The annual report issued last week shows the following income account for the year ended December 31, 1921:

| | 1921 | †1920 |
|---|---|---|
| Operating revenues | $6,329,586 | |
| Operating expenses | 5,854,466 | |
| Net revenues from operations | $475,120 | |
| Taxes | 573,862 | |
| Operating income | ‡259,591 | $624,993 |
| Non-operating income | 661,484 | 702,607 |
| Gross income | $401,893 | $1,327,600 |
| Interest on funded debt | 392,325 | 392,325 |
| Total deductions | 508,771 | 496,675 |
| Balance of income | ‡$106,878 | $830,925 |
| Dividends of 6 per cent on common stock | ..... | 360,000 |
| Additions and betterments charged to income | ..... | 821 |
| Balance carried to profit and loss | ‡$106,878 | $470,104 |

* Dividends of $360,000 charged to Profit and Loss.
† Operating revenues and expenses are not comparable, the property having been operated by the U. S. R. A. during January and February, 1920.
‡ Deficit.

SOUTHERN RAILWAY.—*Equipment Trusts Offered.*—Hambleton & Co. and E. Lowber Stokes & Co. are offering $2,974,400 Southern Railway Company stamped equipment trust 6 per cent gold notes, maturing $228,800 each January 15, from 1923 to 1935 inclusive, at prices to yield from 4.50 per cent to 5.75 per cent, according to maturities.

ST. LOUIS-SAN FRANCISCO.—*Equipment Trusts Sold.*—A syndicate composed of Speyer & Co., J. & W. Seligman & Co., the Guaranty Trust Company and Lee, Higginson & Co., have sold, subject to the approval of the Interstate Commerce Commission, $6,000,000 of 5 per cent equipment trust certificates maturing in equal annual instalments from September 1, 1923, to September 1, 1937, inclusive, and secured on standard equipment costing about $8,000,000. The bonds were sold at prices to yield from 5 to 5.30 per cent.

TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS.—*To Increase Capital.*—The stockholders will vote October 9 on increasing the capital stock from $50,000,000 to $100,000,000, on increasing the bonded indebtedness from $50,000,000 to $100,000,000 and on amendments to the charter or articles of association.

President Henry Miller when asked if the capitalization increase would be the forerunner of a program of expansion and improvement, declared that the reason behind the move was to take care of future financing for provisions necessary to keep pace with growing business. Mr. Miller said that no announcement will be made regarding any future plans until the increase has been authorized.

## Treasury Payments to Railroads

Since last announcement, dated August 1, 1922, payments under Sections 204, 209, 210 and 212 of the Transportation Act, 1920, as amended, have been made by the Treasury as follows:

| | |
|---|---|
| Section 204: | |
| Chesapeake Western | $11,040 |
| Colorado Springs & Cripple Creek District, Receiver | 284,321 |
| Emmitsburg Railroad | 2,998 |
| Manchester & Oneida | 6,327 |
| Okmulgee Northern | 15,684 |
| Owasco River | 21,740 |
| Spokane & British Columbia | 14,290 |
| Section 209: | |
| Aransas Harbor Terminal Railway | 18,094 |
| Chicago, Peoria & St. Louis, Receivers | 78,373 |
| Denison & Pacific Suburban | 341 |
| Emmitsburg Railroad | 2,498 |
| Galveston Wharf Company | 31,743 |
| Liberty-White Railroad Company, Receiver | 8,104 |
| Manchester & Oneida | 5,487 |
| Montana Western | 4,019 |
| Sandy River & Rangeley Lakes | 26,534 |
| Sioux City Terminal Railway | 21,623 |
| Wabash | 618,288 |
| Section 210: | |
| Cisco & Northeastern | 27,862 |
| Section 212: | |
| Salina Northern, Receiver | 8,000 |
| Total | $1,207,366 |

Total payments to August 31, 1922:

| | | |
|---|---|---|
| (a) Under Section 204, as amended by Section 212 for reimbursement of deficits during Federal control: | | |
| (1) Final payments, including partial payments previously made | $3,166,676 | |
| (2) Partial payments to carriers as to which a certificate for final payment has not been received by the Treasury from the Interstate Commerce Commission | 1,178,102 | |
| Total payments account reimbursement of deficits | | $4,344,778 |
| (b) Under Section 209, as amended by Section 212 for guaranty in respect to railway operating income for first six months after Federal Control: | | |
| (1) Final payments, including advances and partial payments previously made | $99,261,777 | |
| (2) Advances to carriers as to which a certificate for final payments has not been received by the Treasury from the Interstate Commerce Commission | 216,775,672 | |
| (3) Partial payments to carriers as to which a certificate for final payment has not been received, as stated above | 130,367,722 | |
| Total payments account of said guaranty | | 446,405,171 |
| (c) Under Section 210 for loans from the revolving fund of $300,000,000 therein provided | | 314,721,805 |
| Total | | $765,471,754 |

Repayments of loans have been made to the amount of $81,396,500.

## Dividends Declared

Atchison, Topeka & Santa Fe—Common, $1.50, quarterly, payable December 1 to holders of record October 27.

Lackawanna Railroad of New Jersey—1 per cent, quarterly, payable October 1.

Lehigh Valley—Common, 1¾ per cent, quarterly; preferred, 2½ per cent, quarterly; both payable October 3 to holders of record September 16.

New York, Chicago & St. Louis—Common, 1¼ per cent, quarterly, payable September 30 to holders of record September 19; common, 1¼ per cent, quarterly, payable December 30 to holders of record December 19.

Pittsburgh, Bessemer & Lake Erie—Common, 1½ per cent, semi-annually, payable October 1.

St. Louis, Rocky Mountain & Pacific—Common, 1 per cent, quarterly; preferred, 1¼ per cent, quarterly; both payable September 30 to holders of record September 16.

Southern Railway (Mobile & Ohio Certificates)—$2.00, semi-annually, payable October 1 to holders of record September 15.

Western Pacific—Preferred, $1.50, quarterly, payable October 20 to holders of record October 10.

## Trend of Railway Stock and Bond Prices

| | Sept. 12 | Last Week | Last Year |
|---|---|---|---|
| Average price of 20 representative railway stocks | 74.16 | 73.07 | 58.36 |
| Average price of 20 representative railway bonds | 90.37 | 89.66 | 76.44 |

# Railway Officers

## Executive

**C. M. Conway** has been elected president and general manager of the newly formed Graysonia, Nashville & Ashdown, (successor to a part of the Memphis, Dallas & Gulf) with headquarters at Texarkana, Ark. The vice-presidents elected are: **Martin Walsh,** vice-president and traffic manager; **Louis Heilbron,** vice-president and land commissioner, and **J. K. Riffel.**

## Financial, Legal and Accounting

**G. C. Shindel** has been appointed paymaster of the Chicago, Burlington & Quincy, with headquarters at Omaha, Neb.

**George F. Ancrum** has been appointed assistant treasurer of the Grand Trunk with headquarters at Montreal, effective September 1.

**H. R. Martin** has been appointed general attorney of the Grand Trunk, Western Lines; **Harrison Geer,** consulting attorney; **W. A. Geer,** attorney; and **Leo J. Carrigan,** attorney—all with headquarters at Detroit, Mich.

**Henry H. Larimore,** assistant general attorney of the Missouri Pacific, with headquarters at St. Louis, Mo., whose promotion to general attorney and interstate commerce counsel was reported in the *Railway Age* of August 26, was born September 14, 1874, at Mexico, Mo. His early education was received at Missouri Military Academy, Mexico, Mo., from which he graduated in 1894. In 1896 he graduated from Washington and Lee University, Lexington, Va., where he studied law. Mr. Larimore entered railway service on February 1, 1909, with the Missouri Pacific in the legal department. On March 1, 1915, he was appointed assistant attorney, with headquarters at St. Louis. On October 1, 1919, he was again promoted to assistant general attorney for Missouri, retaining this position until he was appointed general attorney and interstate commerce counsel on September 1, 1922.

Henry H. Larimore

## Operating

**N. A. Williams,** superintendent of the Wyoming division of the Union Pacific with headquarters at Cheyenne, Wyo., has been appointed general superintendent of the Los Angeles & Salt Lake with headquarters at Los Angeles, Cal. Mr. Williams will be succeeded by **J. E. Mulick.**

**W. R. Smith,** general superintendent of the Central district of the Great Northern, with headquarters at Great Falls, Mont., has been transferred to the Western district, with headquarters at Spokane, Wash., to succeed **F. S. Elliot** who has been granted a leave of absence. **F. Wear,** division superintendent of the Butte division, with headquarters at Great Falls, Mont., has been promoted to general superintendent of the Central district, with the same headquarters, to succeed Mr. Smith. He will be succeeded by **T. F. Dixon.**

## Traffic

**W. F. Van Norte** has been appointed general agent of the Midland Valley with headquarters at Pawhuska, Okla.

**W. A. Wilson,** city passenger agent of the Great Northern at Duluth, Minn., has been promoted to district passenger agent, with the same headquarters.

**H. R. Todd,** general agent of the Colorado & Southern, with headquarters at Birmingham, Ala., has been transferred to Atlanta, Ga., succeeding W. T. Vardaman.

**O. B. McClellan** has been appointed commercial agent ot the Erie, with headquarters at Akron, O., and **W. K. Vandiver** has been appointed commercial agent, with headquarters at Birmingham, Ala., succeeding H. L. Scott. **C. W. Dow** has been appointed commercial agent, with headquarters at Boston, Mass.

# Obituary

**Robert Quayle,** who retired as general superintendent of motive power and machinery of the Chicago & North Western on May 1, 1922, died at his home in Oak Park, Ill., on September 13 at the age of 69.

**James Truman Clark,** president of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, Minn., died on September 8, from heart trouble. Mr. Clark is one of the long list of railroad presidents who have risen from the traffic department. From the time that he entered railway service as a messenger boy 52 years ago, Mr. Clark's life is typical of the success that rewards whole-souled devotion to a single end. He was prominent in the St. Paul union depot project and as the representative of the North Western interests in the negotiations preceding the acceptance of the first station site, later rejected by the government, he did much to harmonize the many conflicting interests of the roads involved and to bring about a general agreement for a single plan. Mr. Clark was born on November 20, 1852, at Auburn, N. Y. He entered railway service in 1870 as a messenger boy in the general agent's office of the Illinois Central at St. Louis and up to July, 1873, held various clerical positions. From July, 1873, to April, 1880, he was employed in the general passenger department, general superintendent's office and general manager's office of the Chicago & North Western. From April, 1880, to January 15, 1883, he was general agent at Omaha and Council Bluffs. On the latter date he was appointed assistant traffic manager of the Chicago, St. Paul, Minneapolis & Omaha. He was appointed assistant general freight agent of that road in November of the same year, which position he held until December, 1884. For the next 12 years he held the position of general freight agent, being promoted to general traffic manager on October 1, 1896. On June 5, 1899, he was promoted to vice-president in charge of traffic. On March 9, 1903, his jurisdiction was extended over the operating and construction departments. He was elected president on May 23, 1916, which position he held up to the time of his death.

J. T. Clark

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THE UNION PACIFIC has announced reductions in transcontinental freight rates on shoes, confectionery, machinery, cereals, dry goods, hardware, fish, cotton, tin, portable houses, shovels, canned goods, stoves, chinaware, plumber's goods and clothing.